TEXTILE READER'S GUIDE

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Fibers 880
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Fabric Production 891
Standard Finishing 902
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Testing and Measurement 916
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Chemistry and Physics of Textile Materials 920
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Advertising rates are available upon request.

Abstracts

[880]

FIBERS A

Natural Fibers A 1

Cellulose acetylation

Brit. P. 664, 465, Jan. 9, 1952. Brit. Celanese Ltd.; *Brit. Rayon & Silk J. 28*, pp (Mar. 1952).

It is proposed to replace the acid pretreatment by an activating process in which the cellulose is fibrillated in the presence of a liquid medium able to cause a swelling of the fibers so that acetylation may then be effected in a matter of minutes. It thus becomes feasible to manufacture cellulose acetate by continuous method. The fibrillation here envisaged involves breaking down the cellulose fibers into their constitutent fibrils without appreciable transverse cutting or breaking of the fibers. Fibrillation is generally carried out in water in apparatus capable of beating or shearing the fibers and it can be assisted by the presence of lower fatty acids such as acetic acid and an esterification catalyst such as sulphuric acid, the activated cellulose loses much of its activity towards an esterifying mixture if it is dried.

Enzymic degradation of cellulose fibers

Robert Blum & Wm. H. Stahl. *Textile Res. J. 22*, 178-92 (Mar. 1952).

The effects of a cell-free extra-cellular cellulolytic enzyme solution on the properties of cotton fiber, viscose rayon and Bemberg rayon were investigated. Comparative observations were also make on fungus-degraded cotton. The early stage of degradation of the fibers is strongly characterized by a rapid loss of tensile strength.

Exterior tar spots concentration 10 times that inside bale.

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of cotton bales as well as inspection of railway cars and trucks that carried cotton to each mill. Results of the testing program indicate that contamination after the cotton leaves the bale press at the gin and before the bale reaches the mill opening room is a major source of tar spot trouble and that shipment of cotton bales in railway box cars and trucks contaminated with tar results in contamination of the cotton. The tests also indicated such conclusions as: that tar contaminated cotton bales show a concentration of spots on the exterior surfaces; that there is no clear seasonal pattern for the occurrence of tar spots; that there is no clear evidence that contaminated cotton originated from any particular growing area or any particular shipping route, etc.

In this report, prepared by the National Cotton Council, on the work of the committee, the nature of tar spots and a brief history of the tar spot problem are also reviewed.

Artificial fibers — A 2

A scheme for fiber indentification

J. E. Ford and W. J. Roff. *Dyer 107*, 211 (Feb. 8, 1952).

A scheme covering the indentification of new and old fibers, with the exception of purely experimental fibers, is described.

Anti-static composition

Courtaulds, Ltd. and H. Paul. Brit. P. 662,542. *Dyer 107*, 118 (Jan. 25, 1952).

New anti-static agents for cellulose acetate. protein and nylon staple fibers consist of aqueous compositions in which are dissolved or dispersed alkylolamine salts of dibasic acids having the general formula HOOC-(CH2)n-COOH where n is an integer not less than 4. The preferred alkylolamine is triethanolamine. Preferably the composition also contains an alkylolamine salt of a fatty acid, such as capric acid, the molecule of which contains at least 10 carbon atoms. The agents may be applied by spraying, preferably from an atomizer, in a centrifuge, or by immersing the fibers in the composition and then removing the excess by centrifuging or through pressure rollers.

New methods for new fibers

John L. Beacon. *Rayon & Synthetic Tex. 33*, 36, 99-100 (April 1952).

The introduction of synthetic staple fibers into the textile industry has probably been one of the greatest incentives responsible for the tremendous advancement in textile technology which

has occured within recent years. Notwithstanding the numerous other factors responsible for the many improvements, unquestionably the demands of spinners for equipment to handle the new synthetic fibers has accelerated the pace at which new types of equipment have been designed and placed into production.

The link between plastics and textiles

A. Hill. *Dyer 107*, 213 (Feb. 8, 1952).

The fundamental link of molecular structure between plastics and textiles; the use of textiles in conjunction with plastics to achieve special effects; and the use of plastics in the textile industry are briefly reviewed.

YARN PRODUCTION — B

Fiber preparation — B 1

Circuit closure for textile machines

Austin E. Stevens. USP 2,580,136, Dec. 25, 1951.

A switch for the circuit of stop motion device for a moving web of material comprising an adjustable mountable casing, the switch casing consisting of two interfitting half sections, sleeve bushings mounted in and extending outwardly from the side walls of each half section of the casing, rock shafts mounted in the bushings, switches mounted on the inner ends of the rock shafts within the casing, web feeler arms attached to the outer ends of the rock shafts and extending outwardly past the rear face of the switch casing and adapted to extend toward the material, weights on the free ends of the feeler arms tending to move the arms to switch closing position, and an L-shaped bracket having its shorter leg adjustable attached to the rear wall of the switch casing and having its longer leg extending from the rear wall of the casing and adapted to be adjustable mounted whereby the feeler arms can be adjustably positioned with respect to the material being fed.

Carding and combing — B 2

An electromagnetic drive for a textile card comb

Sabert Oglesby, Jr. and A. L. Thomas, Jr. *Quarter Bull. of Southern Research Institute 5*, No. 1, pages 13-15 (1952).

See front section.

Card and drawing sliver regularity discussed

Staff. *Textile Industries 116*, 177, 179, 181 (Mar. 1952).

In the process of converting the tangled fibers of card sliver to the straightened and almost paralled fibers of drawing sliver, several functions occur which tend to upset the regularity of the card sliver. Careful planning should be given to the draft required in each drafting zone to prevent plucking or chopping the slivers. Roll settings, correct tension on the web front and calender rolls, front roll speeds, etc. all play an important part in producing even sliver on drawing frames.

Results of a test by another contributor on card and drawing sliver showed evidence that the drawing process decreases yard variation in the sliver but increases the inch-to-inch varation. Running as heavy a card sliver as feasible is said to tend to decrease the inch-to-inch variation. Also a draft slightly higher than the number of ends upon the drawing frame tends to increase the variation. Single process drawing has been found to decrease the yard-to-yard variation but to increase the inch-to-inch variation.

Cotton research clinic hears how better yarn behavior obtained with higher card speeds

Anon. *Textile Bulletin 78*, 75-6 (Mar. 1952).

Long staple fibers—a developing trend

James Osborne. *Textile Age 16*, 18-24 (March 1952).

See front section.

Paint card lap rolls-eliminate break-backs

Staff. *Textile Industries 116*, 179 (Mar. 1952).

At Veteran Mills it was found that on new cotton cards as the laps decreased in diameter and weight, the traction between that lap and the lap roll was reduced to the extent that the weight of the pin was sufficient to cause it to break back. A coat of aluminum paint on card lap rolls provided a surface not quite so slick and has virtually eliminated break-backs.

Table permits standard nep counting method

Lyle E. Hessler. *Textile Industries 116*, 181 (Mar. 1952).

A table for the standardization of nep count is presented. The count in the table is on 100 square inch, arrived at by taking 5 counts on 50 square inch nep boards and reducing it to the 100 square inches. All weights of sliver may be referred back to the 40-grain standard basis by using the table.

Tests reveal card maintenance needs

Guy Glenn. *Textile Industries, 116*, 116-17 (Mar. 1952).

A planned maintenance program which includes testing by the assistant overseers is described. The first shift assistant overseer tests each day sliver from four drawing deliveries on an evenness tester and also checks each day the weight of samples of roving from each size being made. Once every month he counts nep from the web of all cards on an evenness tester every day and helps make the nep count. The third shift assistant overseer prepares and boards yarn samples for grading tests. Card grinders grind and reset three cards each day, and samples are then taken from ten flats from each of the three cards to test the strip weights. Information obtained from these tests is used to find the cause of any trouble, and the necessary maintenance work is then done. To make sure that the maintenance work is done properly, follow-up testing by the assistant overseer in their regular test program is used as a check.

Woolen card accessories announced by Whitin

Staff. *Textile Industries 116*, 83, 85 (Mar. 1952).

The Uxbridge type exhaust and fancy cover for Whitin woolen cards consists of a sheet metal cover for the fancy roll so designed that the air flow removes all the fibers thrown off by the fancy roll, conducts them through an outlet on the cover to a flexible pipe, of gradually increasing diameter, which leads to an overhead duct and then to an exhaust fan. Waste removed by the unit can be returned directly to bins or feed chutes leading to automatic feeder, or returned to a filter bag units.

Filling-in side plates for the workers and strippers of Whitin woolen cards are accurately fabricated metallic sheets which fit in the sides of the cards and practically eliminate stock accumulation around the ends of the workers and strippers. They are said to improve the safety factor of the card. Benefits derived from these new accessories include reduction of waste, savings in maintenance and better working conditions. Mfr: Whitin Machine Works.

Drafting and roving B 3

Altered caliper measures roll space

Staff. *Textile Industries 116*, 177 (Mar. 1952).

An altered caliper rule is shown in an ac-

companying sketch for measuring drawing, roving, and spinning frame rolls and the space between the rolls. The caliper rule may be graduated in millimeters and inches.

Poor quality cloth traced to faulty drawing sliver

E. H. Helliwell. *Textile World 102*, 139, 280, 284 (April 1952).

See front section.

Textile drawing roll

Merton W. Taylor (to Saco-Lowell Shops). USP 2,584,640, Feb. 5, 1952.

In a textile drawing roll having a plurality of roll sections; coupling means for the sections including an axially alined recess having an internally threaded portion in one of the sections and an axially aligned externally threaded portion on an adjacent section adapted to be retained by the internally threaded portion on the first section, the threaded portions having substantially greater clearance at the end adjacent the end of the first section than at the end away from the end of the first section, whereby the sections of the roll are easily alinged.

Spinning B 4

Apparatus for yarn twisting

Alvin L. Ewing (to E. I. du Pont de Nemours and Company) USP 2,577,571, Dec. 4, 1951.

In combination, a grooved spindle; a bobbin cap having a bushing adapted to fit on the spindle, the bushing having a slot and positioned therein locking means cooperating, by action of centrifugal force, with the grooved spindle to hold the cap on the spindle.

Double twist spindle

Chadwick B. Kingsbury (to North American Rayon Corp.) USP 2,576,124, Nov. 27, 1951.

In a double twist spindle the combination of a stationary shaft, a driven spindle portion and a non-driven spindle portion, one end of the driven portion being arranged for rotation on the shaft, the other end of the driven portion carrying bearings for supporting the non-driven spindle portion for permissible partially rotational gyration on the bearings relatively to the driven portion, a bore in the non-driven portion, a resilient sleeve embracing the bearings, the sleeve and the bearings being carried in the bore, the wall of the bore being provided with longitudinally spaced beadings for engaging the

sleeve to retain the sleeve in a non-preloading condition of repose.

Journal for spinning and twisting spindles

Karl Beerli (to Spindel-, Motoren- und Maschinenfabrik A. G) USP 2,583,080, Jan. 22, 1952.

A journal bearing for spinning and twisting spindles, comprising a journal casing adapted to contain a damping liquid, a journal bushing suspended within the casing, a plurality of cylinderical sleeves disposed in the lower part of the casing between the bushing and the casing wall, the sleeves being placed one into the other in radially spaced relationship, the sleeves having curved bottoms provided with apertures for the passage of the damping liquid.

"Over-drive" spinning tape features "hinged" center.

Staff. *Textile Industries 116*, 193, 195, 197 (ar. 1952).

The "Over-Drive" tape for driving spinning and twister spindles, manufactured by Lambeth Rope Corp., has a "hinged center" which is said to create much greater lateral and longitudinal flexibility. This flexibility allows the tape to accurately follow the contour of the whorl, information of an air cushion at any point in the creases spindle speed 1 to 3%, and prevents the driving area. Production is said to be increased from 1½ to 2% with saving in power from 4 to 8% as a result of these conditions. In addition, life of the tape is said to be equal to conventional tapes.

Processing filament rayon yarn requires attention to details

Staff. *Textile Industries 116*, 118-19 (Mar. 1952).

In processing filament rayon ratine and boucle yarns, different lots of rayon and different batches should not be mixed and the binder should be made of the same material as the core yarn so as to avoid difficulties in dyeing. In twisting: there must be uniform tension on all driving bands and in delivering the yarn which forms the nubs; control of static and ballooning are important; and care must be taken to avoid over- or under-twist. Precision wound quills are essential in preventing slough-offs and slack filling, and the avoidance of static electricity in warping is also important. Warp threads should be straight with equal tension applied, and attention should be paid to the proper type of lease rods

used. Finally, shuttle care in weaving is very important. The use of nail polish on cut or nicked shuttles and the use of suet for shuttle polishing and lubricating are mentioned.

Ring spinning frame

Norbert Hooper (to Tweedales and Smalley (1920) Ltd.) USP 2,590,621, Mar. 25, 1952.

A ring spinning frame in which both the bobbin supports and the ring rails are reciprocated so that each one need move only half the distance one of them would have to move if the other were maintained stationary.

Slub detector

Paul A. deMars (mesne assignments to Raymond M. Wilmotte) USP 2,585,541, Feb. 12, 1952.

In apparatus for detecting defective yarn, a close flux magnet, an armature normally in contact with the close flux magnet, means comprising an open flux magnet for applying force tending to remove the armature from contact with the magnet, the force substantially balancing the attractive for the armature, the armature being movable with respect to the close flux magnet in response only to the applied force supplemented by further force generated by contact of defective yarn with the armature.

Spinning and weaving X-51 acrylic fiber

C. W. Bendigo. *Textile Bulletin 78*, 62, 64-5 Mar. 1952).

See front section.

Textile fiber drafting element and method of making same

Robbert C. Treue (to Dayton Rubber Co.) USP 2,576,980, Dec. 4, 1951.

A lap-resistant textile fiber drafting element having a fiber working surface comprising a synthetic rubber-like polymerization product of an aliphatic conjugated diene hydrocarbon and having the surface thereof modified by the reaction with an aqueous solution of sulfuric acid containing the dichromate ion, the sulfuric acid concentration being at least about one percent but insufficient to effect substantial deterioration of the rubber-like material, and its dichromate ion concentration being at least about 0.01 mol per tiler.

Textile mill spindle

Herbert Gleitz, Charles E. Miller & Jerome D. Gleitz (to The Marquette Metal Products Co.) USP 2,582,325, Jan. 15, 1952.

A textile spindle blade assembly adapted to support tapered, paper-tube-type bobbins, the assembly comprising a steel blade and whorl, a light weight metal body embracing the blade and joined thereto unwardly beyond the whorl and abutting a circular upper portion of the latter, and a tapered tube-driving tip of wear resisting metal rigidly joined to the top end of the body flush therewith and of slightly larger outer diameter somewhat above its base portion than the upper end portion of the light metal body, the body being tapered and reduced relative to the tip and adjacent whorl portion that a uniformly tapered bobbin tube snugly fitted to the driving taper of the tip is maintained during operation of the spindle out of contact with the light metal body for the entire extent of its exposed surface.

Thread guide holder for textile machines

Walter Hoffmann (to Actiengesellschaft Joh. Jacob Rieter & Co.) USP 2,582,778, Jan. 15, 1952.

A thread guide mechanism for spinning and twisting machines comprising an elongated support of approximately circular cross-sectional shape, a thread guide holder movably mounted on the support, a thread guide connected to the holder, the holder having a substantially semicircular cylindrical base portion being provided with a slot extending circumferentially of the support, and holding means secured to the support within the slot, the holding means overlapping portions of the base portion bounding the slot therein and being adapted to hold the thread guide holder in axially adjustable relationship with the support and to limit movement of the holder relatively to the support to upper and lower operative positions.

Traverse mechanism of spinning machines

Francis Edward Smallshaw (to Ashton Bros. & Co. Ltd.) USP 2,584,237, Feb. 5, 1952.

A traverse mechanism for imparting cop-building motion to the ring rail of a spinning frame comprising two cams for governing the chase, one cam being in the form of an annular groove and the other being in the form of a helical groove, a single follower for the cams shaped to enter the grooves, means normally retaining the follower in the annular groove and means for transferring the follower from one groove to the other.

Winding and Spooling B 5

Bobbin package

Jas. B. W. Andrew, Jr. (to Container Corp.) USP 2,588,791, Mar. 11, 1952.

A package for protectively supporting a plurality of bobbins during shipment in which the top of the carton is provided with slotted openings adapted to receive the neck of a knob element projecting from one end flange of the bobbin.

Combination thread guide and clearer for winders

Staff. *Textile Industries 116,* 205 (Mar. 1952).

A new type combination thread guide and clearer for all types of winding machines permits easy regulation of the passage of yarn from the supply package to the delivery package by moving a small knurled nut on the clearer spindle. The clearer blades are hardened steel and are reversible as well as adjustable for height, eliminating excessive wear. Not only can the blades be accurately set to any desired gap without removing or altering the position of the clearer, but they can also be locked in an open position for winding yarn which does not require clearing. Mfr: Manchester Metal Works Ltd.

Self-contained four-spindle automatic winders

Anon. *Textile Mfr. 78,* 33 (Jan. 1952).

The "Cezoma" fully automatic four spindle unit type machine is made by the well-known Dutch company H. W. Ceelen and Zn. Machinenfabriek, of Uden. The four accurately balanced spindles are mounted and driven from a single box unit completely enclosing the cams, gearing and control mechanisms, which, of course, are continuously lubricated, and scrappers protect the yarn against any danger of oil spattering. The empty pirns are housed in a four-compartment magazine which simultaneously serves the four spindles. The machine runs at speeds from 3,600 to 5,000 r.p.m., but the makers claim that a special wind does enable a speed of 7,000 r.p.m. to be attained.

Stop moton for twisting and winding machines

Pacific J. Thomas (to U. S. Textile Machine Co.) USP 2,584,096, Jan. 29, 1952.

A textile apparatus for winding and twisting yarn comprising a supply spindle, a yarn receiving spool and a yarn breakage detector arm in close relationship to one another, spring means for holding the yarn receiving spool in operative position, an operating member controlled by the yarn breakage detector arm and movable and extending between the spring holding means of the yarn supply spindle and yarn receiving spool from an operative position to an inoperative position in its movement in one direction, and effect movement of the yarn supply spindle and yarn receivng spool from their inoperative to their operative position in its movement in the opposite direction.

Winding slippery yarn on a drum winder

Staff. *Textile Industries 116,* 173 (Mar. 1952).

The winding package on a drum winder is driven by frictional contact between the package surface and the driving drum, and slick or slippery yarns give insufficient traction so that the drum cannot drive the take-up spindle fast enough to maintain the correct relationship between the traverse and spindle speeds. Use of a knurled metal traverse on the Universal "Rotoconer" provides the traction needed since light serrations around the circumference of the cast iron traverse offier a tread for the cone to drive upon.

Yarn-carrying device

Matthew Michel Taylor (to Celanese Corp. of America) USP 2,577,928, Dec. 11, 1951.

A detachable butt for a flanged pirn tube, to adapt such tube for use in an automatic loom, the butt comprising a body of generally cylindrical shape, a spindle projecting from the end face of the body and adapted to fit the interior of the pirn tube and a rigid hook rigidly secured to the body, the hook extending beyond the end face and inwards towards the spindle and being wedge-shaped so as to present at the acute of the angle of the wedge a radially extending edge adapted to engage and enter a notch in the flange of a pirn fitted over the spindle, the hook being adapted on subsequent turning of the pirn tube to secure the pirn tube to the body.

Yarn package and method of winding

Frank S. Pollock, Jr. (to E. I. duPont de Nemours & Co.) USP 2,585,584, Feb. 12, 1952.

In a yarn package comprising yarn wound around a core support, the improvement which consists in providing, as support for the first yards of yarn wound, an easily removable narrow sleeve encircling one end of the core and spaced apart from the main part of the yarn package so that these first few yards of yarn may be readily disengaged from the rest of the yarn package and unwound for use as a transfer tail.

Yarn winding device

Albert W. Keight (to Celanese Corp. of America) USP 2,77,131. Dec. 4, 1951.

In a device for producing yarn packages, the

combination with rotating yarn supports and a pair of countermoving ring rails for winding yarn onto the yarn supports, of means for traversing each of the ring rails in opposed, counterbalanced relationship to produce a chaser motion with a traverse stroke of uniform length, and means for superimposing a builder motion alternating in direction on each of the chaser motions, so that the path of the uniform traverse stroke of one ring rail relative to a yarn support is progressively raised while the path of the uniform traverse stroke of the other ring rail relative to a yarn support is simultaneously and progressively lowered.

Yarn processing B 6

Liquid treatment apparatus

American Viscose Corp. Brit. P. 662,900. *Dyer 107,* 192 (Feb. 8, 1952).

A liquid treatment apparatus for heavy denier rayon filament bundles, sizing of yarns, and treatment of fabrics in rope form is made up of a number of units with each unit having two spaced canted rolls. The lower roll is partially submerged in a liquid treatment trough, and the upper roll is fluited for working the liquid-impregnated material. The immersion trough has inwardly-projecting ribs and a feed compartwith a weir. A reflux tray comprises compartments separated by transverse walls and is supported by a bracket. A wiper bar, having a number of projecting elements, the points of which are in alignment with the ribs in the trough, tends to return liquid coming from a given compartment of the trough to the same compartment. A connecting rod between the shafts supporting the two rolls provides additional bracing.

Yarn applications B 9

Elastic yarn

Harry E. Cooper (to U. S. Rubber Co.) USP 2,588,361, Mar. 11, 1952.

An essentially single-covered elastic yarn the rubber core of which is covered with a roving which is held in place by a fine high tenacity filament yarn disposed in spaced coils about the roving.

FABRIC PRODUCTION C

Yarn preparation C 1

Shirley regulator seen controlling amount of size on warp at tape frame

Anon. *Daily News Record,* page 26 (March 24, 1952).

See front section.

Slasher for processing blends

Staff. *Textile Industries 116,* 144-7 (Mar. 1952).

A newly introduced slasher which combines an Uxbridge "Gentle Air" unit for high efficiency drying with a multi-motor drive is reported to have increased slasher production and improved weave room efficiency in the blend division at Crown Manufacturing Co. Designed for greater processing flexibility and constructed so as to avoid mechanical stoppages, the slasher includes creel, size box, dryer, and head end together with many advanced features. These features include: positive regulation of warp tension between section beams and loom beams; manual rheostats and a "Rototrol" regulator for governing speed relationships at strategic points along the warps; cork composition squeeze rolls at the size box; anti-friction bearings; etc. Overhead beam handling equipment from warper to storage tiers and magazine creel, from slasher to weave room, and from weave room to warping section permits rapid handling, and automatic locking tailgates on the storage rack prevents beams from rolling off during loading and unloading.

Yarn tensioning device

Thomas K. Rea (to Cocker Machine and Foundry Co.) USP 2,581,142, Jan. 1, 1952.

A yarn tensioning device comprising a bracket with a fixed upstanding yarndirecting stud, and a fixed yarn eye in spaced relation to the stud; an arm of flat spring metal fulcrumed on the stud for capacity to be shifted in the interval between the stud and the guide eye, the arm being spring biased toward the bracket; an upstanding yarn-directing stud anchored in the arm with its bottom end rounded and protruding; and a series of indentations in the support arranged in an arc concentric with the axis of the fixed stud for selective engagement by the bottom protruding end of the stud on the arm to hold the latter in adjusted positions.

Weaving C 2

Actuating mechanism for picking sticks

Edward W. Shertz & Robert S. Work (to Lansdowne Steel & Iron Co.) USP 2,582,761, Jan. 15, 1952.

In a loom having a picking stick for actuating a shuttle, a frame, a picking lever pivotally

mounted on the frame, a pair of brackets mounted on the frame, a tubular picking spring housing removably mounted in the brackets, a picking spring enclosed in the housing, an inner spring guide extending through the bore of the picking spring, an abutment on the guide for compressing the spring upon movement of the guide, an actuating rod connected to the guide, connecting means between the rod and the picking lever, a picking stud roller detachably mounted on the picking lever, a picking knock-off lever pivotally mounted on the frame, walls on the picking knock-off lever defining a recess adapted to receive and to retain the picking stud roller, a removable heat treated forward terminus for the recess and means including a rocker arm for pivoting the picking lever to compress the picking spring and to seat the picking stud roller in the recess on the picking knock-off lever.

Bobbin stripping device

Leo Clark. USP 2,580,003, Dec. 25, 1951.

A bobbin stripping device comprising a stripping member and a discharge member, the stripping member having means thereon engageable by a tail of yarn on a bobbin to retain the yarn, the discharge member having a portion thereof positioned to be engaged by yarn on the stripping member, and means for relatively moving the members to collect yarn from a bobbin on the stripping member, the portion of the discharge member being inclined with respect to the stripping member, the portion of the discharge member being inclined with respect to the stripping member in a direction to move the yarn thus collected lengthwise of the stripping member toward an end thereof for discharging the yarn from the end of the stripping member.

Double shuttle weft replenishing loom

William R. Hewton (to Collins & Aikman Corp.) USP 2,577,419, Dec. 4, 1951.

In a double shuttle weft replenishing loom, a replenishing mechanism on one side of the loom, picking means for simultaneously moving a pair of shuttles across the loom, two superposed movable shuttle compartments on the replenishing side of the loom and means for moving either of the compartments out of superposed relation so that a shuttle may be replenished in either compartment without interference from another shuttle or shuttle compartment.

Graphical analysis of fabric geometry

E. V. Painter. *Textile Res. J. 22*, 153-69 (1952).

Graphs have been developed to simplify the study of fabric geometry. A simultaneous plot of the mathematical relations developed by Peirce aids in visualizing dimensional changes in fabrics and gives accurate values of the various parameters without lengthy calculations and interpolations from tables. The use of the graphs is discussed as they applied to various types of weaves, fibers, and their dimensional changes.

Heddle frame

Frederick Max Suchke (to Pioneer Heddle & Reed Co.) USP 2,577,693, Dec. 4, 1951.

The combination of a heddle frame including cross members and heddle bars therein, tracks on the inside of the cross members of the frame, a stirrup having its ends bent in respect to its central portion and having apertures to receive a track a hanger hook having a stem and a flattened body fastened to the central portion of the stirrup adapted to receive a heddle bar, and a clip having its central portion movably mounted on the stem of the hanger hook and having its ends bent down along the outside of the hanger hook, the ends being notched to engage the edge of a heddle bar.

Improved double lift double cylinder jacquard

Staff. *Textile Industries 116*, 189-90 (Mar. 1952).

Modifications of the double lift, double cylinder jacquard for cards in Vincenzi pitch, manufactured by John T. Hardaker, Ltd., are noted. Woodwork supporting the needles is assembled in the machine frame as a complete unit; griffe blocks are fabricated from bright steel bar with a lighter but stronger structure; a clutch of special design eliminates cards being turned by hand when the cylinder is presented to the needles, eliminates breakage when in an engaged position, etc.; cylinder is adjustable in all directions and the peg wheel and star wheel are attached to the same bracket at fixed centers; a small grease fitting for lubrication with a grease gun is provided on each moving part; etc.

Letoff mechanism for looms

Jaime Picanol. USP 2,585,167, Feb. 12, 1952.

In a loom having a lay sword, and a lever transmitting motion, a positive warp let-off mechanism having a whip-roll, a warp-beam with a pawl and ratchet wheel mechanism, a whip-roll carrier at each loom side, spring means for balancing the whip-roll carries, an axle rotatably supporting the whip-roll carriers, the axle being located at the geometrical locus of all the points for which the resultant of the variable forces

acting on the whip-roll during the unwinding of the warp-beam provides a practically constant torque, a bell crank lever having a fixed pivot pin, a connecting rod transmitting the oscillations of one whip-roller carrier to the bell crank lever, and a second connecting roll pivoted to an end of the bell crank lever, and controlling the adjustable stroke of the lever transmitting motion from the lay sword to the operating pawl of the warp-beam ratchet wheel.

Loom picking motion

Albert Muller (to Albert Muller, Jr.) USP 2,583,005, Jan. 22, 1952.

In a picking device for a loom having a slay with shuttle race; comprising a picker stick, an elbow-lever type traction element pivoted on the picker stick and arranged to move as a unit together with the sley, the traction element being arranged in its extended and initial position substantially parallel to the shuttle race of the slay, a picker arm, and a cam-disc connection for the arm for uniformly moving the same on the loom and for operating the arm in such fashion that the force of impact applied and transmitted to the pivot of the traction element is gradually increased from zero, whereby the latter is moved during picking operation at increasing speed.

Pneumatic thread remover

George N. Peterson (to Crompton & Knowles Loom Works) USP 2,580,191, Dec. 25, 1951.

In a pneumatic thread remover mechanism for a weft replenishing loom having a thread remaining incident to a weft replenishing operation, a carrier movably mounted on the loom operating position and within which subatmospheric pressures exist when the carrier is in operating position, a hollow thread, pick-up head having an intake mouth, a resilient tube normally supporting the pick-up head in non-pick-up position and supported by the carrier, means operating incident to a weft replenishing operation moving the carrier from the normal position thereof to the operating position to locate the head in thread pick-up poistion relatively to the weft thread and deform the tube from the normal shape thereof and cause the tube to tend to move the head beyond the pick-up position thereof, and means tending to hold the carrier in the operative position thereof, the tube being effective incident to slight movement of the carrier from the operating position thereof toward the inoperative position thereof against the action of the last named means to hold the head in pick-up position

due to the tendency of the tube to assume the normal shape thereof.

Practical terry weaving and designing. Article 5

T. Hargreaves. *Textile Industries 116*, 169, 171, 173 (Mar. 1952).

In this fifth article of the series on terry weaving and designing, a method for calculating the standard weight of a dozen terry towels is presented. A method of calculating the let-off gear needed to deliver pile yarn to form the size loop desired and simplified pegging instructions for dobby patterns are also discused.

Reed cleaning and polishing with warp drawn in

Staff. *Textile Industries 116*, 187 (Mar. 1952).

The Spaleck automatic reed cleaning and polishing machine, distributed in the U.S.A. by Kurt Orban Co., uses two circular brushes that move in opposite directions, brushing the reeds through to their full elastic height and cutting down reed conditioning time. The grinding mechanism uses either grinding or pumice stones, and dust from grinding and brushing is drawn by a fan into a dust collector. Both pitch-band and metal-bound reeds can be handled on the machine. A semi-automatic model is also available.

Selective battery system for making multi-color fabrics

Staff. *Textile Industries 116*, 175, 177 (Mar. 1952).

A selective battery filling method is outlined by a contributor for making multi-color fabrics on a single shuttle Draper loom and four-shuttle box looms. The method essentially consists of loading the battery or magazine with several colors of filling according to a predetermined pattern or arrangement. It is said to work best on wide goods using coarse filling. The number of picks of each shade of color is governed by the number of yards per quill, resulting in a random or hand-woven coloring. Some measure of control on color spacing could be obtained by setting up a feeler release mechanism activated by the dobby or Jacquard and by changing the shuttle after inserting a given number of picks.

Tension warp letoff for looms

Gustave A. Geeraert. USP 2,582,863, Jan. 15, 1952.

In a loom, a warp roll, a shaft rotably mounted in warp frames extended from posts at the ends of the loom frame on which the warp roll

is positioned, a transversely disposed shaft rotatably mounted in the end of the loom frame, the shaft having outwardly extended horizontally disposed rocker arms on the ends thereof, horizontally disposed brake levers attached to the warp frames parallel to the rocker arms and extended across the ends of the warp roll shaft for frictionally engaging the shaft to provide breaking means for the roll, springs connecting the outer end of the brake levers and rocker arms on the opposite sides of the loom respectively, and means adjusting the tension on the springs.

Yarn guard for axminister tube frames

Oscar V. Payne (to Crompton & Knowles Loom Works) USP 2,577,267, Dec. 4, 1951.

A group of yarn tubes for an Axminister tube frame, each tube having a circular yarn receiving mouth, the mouths having their centers arranged in two rows and having notches formed incident to the manner in which the mouths are formed, and a yarn guard extending over the tubes in position to prevent a yarn in any mouth from entering the notch corresponding to the mouth.

Shuttle guide

Harold Hoeber, deceased. by Barbara O. W. Hoeber & Wm. T. Read (by mesne assignments to Hoosac Mills Corp.) USP 2,580,297, Dec. 25, 1951.

In a loom, an oscillating lay, a shuttle box on the lay, a shuttle, means for picking the shuttle, the shuttle box having front and back walls and a bottom wall, and a guiding member positioned adjacent to the entering end of the shuttle box with a lower surface parallel to the bottom wall and means to movably mount the member to maintain its lower surface parallel to the bottom wall, the means controlling the movement of the member to cause its surface to remain stationary to direct and maintain the shuttle in position against the bottom of the shuttle box when the shuttle is driven out of the box.

Textile inspection apparatus

Henry Tobler, Jr. (to Celanese Corp. of America) USP 2,583,674, Jan. 29, 1952.

In a textile inspection machine wherein a textile fabric is drawn from a supply roll, passed across an inspection board and wound onto a batching roll, a feed roll for engaging the textile fabric, a drive for positively rotating the feed roll to move the textile fabric across the inspection board at a constant linear speed, a drive including a hydraulic torque converter for applying a torque to the supply roll tending to rotate the same in a direction opposite to that necessary to unwind the textile fabric therefrom, and a drive including a hydraulic torque converter for applying a torque to the batching roll tending to rotate the same at a peripheral speed greater than the peripheral speed of the feed roll.

Warp beam

Fred Eastwood, Leopold Lasch & Arthur E. Rogers. USP 2,580,533, Jan. 1, 1952.

A warp beam comprising a tubular barrel, a metal flange element slidably mounted on the barrel with its axially inner surface perpendicular to the barrel axis, an intergral rib extending axially outwardly from the flange element and located between the inner and outer peripheries of the element, the rib having a first locating surface at its axially outer side arranged in a plane parallel to the axially inner surface of the flange element, and a second locating surface arranged angularly with respect to the first locating surface, both the locating surfaces being concentric with the axis of the barrel, a hubless toothed metal ring demountably secured on the flange element and having a radially inwardly projecting part formed with surfaces seating on the locating surfaces of the rib, a member secured to the barrel and having a projection abutting the end of and extending radially outwardly from the barrel, a projection on the flange element having a radial surface parallel to an adjacent radial surface of the projection on the member, and means securing the projection on the flange element to the projection on the member with their respective radial surfaces in predetermined relationship axially of the barrel.

You can reduce your shuttle-fur costs

Richard B. Pressley. *Textile World 102,* 130-1, 244-246, 248 (April 1952).

See front section

Knitting C 3

Alfred P. Saunders (to Wildt & Co.) USP 2,580,603, Jan. 1, 1952.

Knitting machine

In a machine for the manufacture of knit consisting of successive plies of fibrous roving and an edging of woven fabric united thereto by knitting the combination of a ply guide, knitting mechanism comprising a plurality of sets of needles in front and in the rear of the ply guide, other needles in the rear of the ply guide without mat-

ing needles in front, and means for supplying thread to the needles.

Needle press mechanism for straight knitting machine

Horace C. Grant (to Egan Cotton Mills, Inc.) USP 2,580,089, Dec. 25, 1951.

In needle press mechanism for a straight knitting machine having a bar with a series of needles, and a stationary bed with transverse grooves for guidance of a series of slide sinkers and with a longitudinally-extending press edge, the combination of a member by which the needle bar is hingedly supported for press movement; a vertically-arranged oscillated press arm: a horizontal link through which press movements are imparted to the needle bar from the press arm; and an adjustable pivot structure connecting one of the link to the press arm, including a stud fixed in the press arm, an eccentric sleeve rotatively shiftable about the stud and engaged in the link, and means for preventing accidental rotative displacement of the sleeve in adjusted positions.

Needle selector mechanism for knitting machines

Otto F. Smetana (to Karl Lieberknecht, Inc.) USP 2,281,307, Jan. 1, 1952.

In a circular knitting machine having vertically movable needles and selectors associated with the vertically movable needles and being provided with selector butts thereon, the knitting machine also having a plurality of selector levers adapted to be moved into engagement with the butts on certain of the selectors, an improved pattern drum for moving the selector levers into order comprising an upper pattern drum section and out of operative position in predetermined and a lower pattern drum section, an inner tubular member on which the lower pattern drum section is fixedly mounted, the upper pattern drum section being rotatably on the inner tubular member, a vertically disposed shaft on which the inner tubular member is rotatably mounted, a first ratchet wheel fixed on the inner tubular member and a second ratchet wheel fixed on the upper pattern drum section, pawl carrying means adjacent the ratchet wheel, means for driving the pawl carrying means in an oscillatory manner adjacent for imparting step-by-step rotation to the upper and lower sections of the pattern drum, means for rendering the pawl carrying means inoperable with respect to one of the ratchet wheels and maintaining operation of the pawl carrying means with respect to the other of the ratchet wheels so as to impart step-by-step

rotation to one of the selector pattern drum sections and independently of the other pattern drum section.

Straight bar knitting machine

George F. Teague (to Whiting Hosiery Mills, Inc.) USP 2,579,161, Dec. 18, 1951.

In a straight bar knitting machine, yarn carrier driving mechanism comprising, in combination, reciprocatory yarn carriers, stops for determining the extents to which the yarn carries are traversible, reciprocable operating members, spring-controlled dogs fitted in the operating members, bars in which the operating members reciprocate, means for transmitting motion between the operating members and the yarn carriers, continuously reciprocable driving means having a constant stroke, and including yieldable elements for cooperation with the aforesaid dogs, and means for selectively moving the operating members and their bars into and out of the range of the driving means, the construction and arrangement being such that whenever an operating member and its bars are selected and brought into the range of the driving means the relevant yieldable driving element acts upon the dogs of the appropriate pair alternately and so effects traverses of the corresponding yarn carrier in opposite directions and the extents of which are determined by arrest of the yarn carrier by the appropriate stops at which times the driving element yields and disengages the operating member from the driving means, thereby enabling the latter to reciprocate to the full extent of their constant stroke.

Take-up reel for knitting machines and method of operation

Frederick W. Ruehling & Herbert E. Haehnel (to Textile Machine Works) USP 2,580,186, Dec. 25, 1951.

A cylindrical fabric draw-off reel unit for a flat knitting machine comprising a shaft, two end sections fixed to the shaft and having draw-off straps connected thereto, and a central section on the shaft and having bearing means between itself and the shaft adapting the central section for free rotation relative to the shaft, the central section having an uninterrupted smooth cylindrical surface.

Tension on rayon in knitting

Staff. *Textile Industries 116*, 185 (Mar. 1952).

Simple modifications for filament rayon yarn holders in knitting are described and illustrated.

The modifications are said to control the yarn satisfactorily throughout the run, preventing the yarn from slipping down the side of the cone and becoming snagged and permitting even tension on the yarn. Parts needed for the change include a tin lid, a rubber ring, and some fine rubber thread.

Yarn trapping and severing means for circular knitting machines

Albert M. Brown (to G. Stibbe & Co. Ltd.) USP 2,580,53, Jan. 1, 1952.

In a circular knitting machine, in combination, yarn trapping means consisting of a fixed member and a relatively movable trapper jaw adapted to trap and hold between them a yarn withdrawn from knitting, an associated cutting device comprising relatively movable scissor blades for severing a withdrawn yarn, a welt mechanism comprising a dial equipped with welt instruments and cams for actuating the instruments in the production of welts, means which operatively connect a selected one of the welt cams with the cutting device and are adapted normally to maintain the device closed, and means adapted not only to render the welt cam operative in the making of a welt but also to move the cam at required times such wise as to actuate the cutting device.

Special fabrics C 4

Hy-du-lignum picker sticks to be sold in USA by US Bobbin & Shuttle

Staff. *Textile Industries 116*, 201-2 (Mar. 1952).

Hi-du-lignum picker sticks, manufactured by Hordern-Richmond Ltd., are made from specially selected, rotary-cut birch or beech veneers, laminated and bonded with a resin adhesive under heat and pressure. They are said to be practically as light and resilient as hickory and to have uniform density, resilience, total lack of material fatigue, and possess a life expectancy of a minimum of 5 or 6 times that of hickory.

Production of sheer fabrics

I. C. I., J. D. H. Hall, B. P. Ridge, and J. R. Whinfield. Brit. P. 652,948. *Dyer 107*, 194 (Feb. 8, 1952).

Sheer fabrics of highly polymerized polythylene terephtalate with improved handle may be produced by treatment of the fabrics with an aqueous solution of caustic soda or caustic potash on the winch or jig. The fabrics undergo a reduction in weight, uniform throughout the material, which bears a relation to the time of treatment. Conditions to reduce the material thickness may be ascertained by a series of simple tests; e.g., by preparing graphs in which time of treatment is plotted against material thickness.

STANDARD FINISHING D

Discoloration of fur felt

British Hat & Allied Feltmakers' Research Assoc., T. Barr and D. Haigh. Brit. P. 652,018. *Dyer 107*, 194 (Feb. 8, 1952).

Prevention of the formation of reddish brown basic mercury salts, which discolor grey fur felt, in the boiling, before dyeing, of grey mercury carrotted fur felt in water containing carbonates or bicarbonates is claimed. An ammonium salt of a strong acid is added to the water in an amount chemically equivalent to the amount of carbonates or bicarbonates in the water, and the water is boiled for 10 minutes before entering the felt. The ammonium salt may be added in excess of this chemical equivalent, in which case the felt is boiled without any preliminary boiling of the water.

Fabric guiding mechanism and feeler control therefor

Chester W. Johnson to Nuproducts Corp.) USP 2,577,195, Dec. 4, 1951.

Textile sheet mechanism for sheets of different widths or of varying width, constituting an attachment particularly adapted for and coating with textile sheet handling and processing mechanisms, the attachment having at least one transversely extending, transversely-inclined guiding roll about which the textile sheet passes, which guiding roll is mounted upon an axis the angle of transverse inclination of which may be changed by the guiding mechanism attachment, thereby to rectify the course of travel of the textile sheet, the sheet guiding mechanism attachment including also a pair of oppositely extending, upwardly and outwardly inclined feeler fingers to engage the opposite edges of the textile sheet irrespective of the width thereof, and past and between which the textile sheet travels in contact with such transversely inclined guiding roll, a feeler control arm constituting the sole and common support for the pair of feeler fingers located closely adjacent to one face of the textile sheet and extending transversely of and across the textile sheet and mounted for movement upon movement of either of the feeler fingers due to lateral movement of the textile sheet away from

its true path, and means operatively connected to the feeler control arm and also operatively connected to the textile guiding roll for causing a shifting of the axis of the guiding roll and thereby rectifying the path of travel of the textile sheet.

Modern drying machines

T. H. Sedgwick. *Dyer 107*, 105-10 (Jan. 25, 1952).

The squeezing or wringing machine, the hydro-extractor or centrifuge, and the vacuum extractor ore discussed in relation to the drying of worsted or woolen fabrics. Although the efficiency of the centrifuge is the greatest of these 3 methods of drying, the vacuum extractor gives less possibility of creases since the cloth is treated in full width.

The design and operation of the tenter machine, which not only dries the fabric but also straightens and fixes the width in a standard manner, are described. Descriptions are also given of the Charlesworth-Whitely machine, the E. Gordon Whiteley machine, and the Spooner machine.

High speed piece-end sewing machine

Anon. *Dyer 107*, 133 (Jan. 25, 1952).

The new J-H model butt seam piece-end sewing machine, manufactured by N. W. Harrap, Ltd., is designed for sewing at high speed average weight materials of cotton, silk, rayon, fine worsted, gabardines, etc. Two piece ends are fed together into the machine, and pair of small fast-running shear blades trim the edges of the fabric to give a close seam. The machine then immediately sews the ends together with a special chain stitch in a straight seam having no overlap at the joint. The stitch can withstand any normal pull in handling, yet can be readily ripped out afterwards.

Plain weaves for dress wear

Anon. *Dyer 107*, 179-80 (Feb. 8, 1952).

Care must be taken in the processing of plain weave fabrics for dress wear since any contraction in width or length will cause "diamonding" or severe "angling" of the weave. Both yarn and piece dyed forms are also subject to embossing or watering as well as to bursting or cracking of the yarns during processing. Some form of setting operation is essential for both yarn-dyed cloth and fabrics for piece-dyeing as the initial stage in their processing so as to eliminate some of these processing faults. A discussion is given of setting routines, scouring and final

finishing for yarn and piece dyed plain weave fabrics.

Hosiery calender newly designed

Anon. *Dyer, 107*, 183 (Feb. 8, 952).

A new medium type horizontal calender for finishing all classes of circular knit goods is reported to have a newely designed horizontal steaming box that insures both sides of the fabric containing uniform moisture content to provide first quality finish. Features of the machine include: overfeed to stretcher; fabric steamed on stretcher; large-diameter covered bowls; no waste at end of roll; three speed drive; etc. Mfr: Samuel Pegg & Son.

Rayon and synthetic fibers

Anon. *Dyer 107*, 207, 215 (Feb. 8, 1952).

Many casement and hanging fabrics are processed on a jigger for both scouring and deying, and when dyeing is carried out in other types of machines, the jigger is still frequently used for scouring. There are disadvantages in using the jigger both in dyeing and scouring, and these are briefly discussed. A continuous process embracing scouring, washing, intermediate drying by radiant heat, padding, steaming, and washing off is suggested for the processing of casement and hanging fabrics. The main disadvantage of such a method would be in short runs where cleaning time of, for example, the steaming box would offset time gained over jigger processing.

Shortened bleach treatment

I. C. I. Ltd., W. A. S. White, and N. F. Crowder. Brit. P. 662,890. *Dyer 107*, 191 (Feb. 8, 1952).

A high degree of whiteness with low chlorite consumption and a low degree of fiber degradation is claimed for this bleaching process for bast fibers, such as linen. The chlorination process is carried out by treating the material with sodium or calcium hypochlorite solution of pH between 1 and 8, increasing the pH of the solution of a value above 8 by addition of caustic soda or other alkali, and treating the material for a further period in the alkaline solution. The material is then removed from the bath, washed with cold water, and given a final bleeach with hot chlorite solution, of concentration as small as 2 grams per litre, expressed as $NaC10_2$, at an initial pH as high as 5.5. A buffer salt is used to prevent undue change in the pH value of the chlorite solution. The chlorite treatment may be followed by peroxide.

Textile plating machinery

Sellers & Co. Ltd. and E. R. Sellers. Brit. P. 663,636. *Dyer 107*, 193 (Feb. 8, 1952).

In a textile rigging and plaiting machine, the rigged fabric is led to the plaiting table over a balance roller which delivers the fabric to the plaiting arm under even tension. The balance roller is mounted in a frame pivoted to swing in a vertical plane above the plaiting table and has two motions, one a regular up and down motion, and a second one in the form of a "creep" in one or the other direction. Excessive movement of the balance roller in either direction energizes an electro-magnetic mechanism which automatically varies the speed of traverse of the fabric during plaiting and restores the balance roller to normal position.

Textile preservative

Eugene E. Perrin. *Rayon & Syn. Tex. 33*, 78, 80 (March 1952).

Copper 3-Phenylsalicylate has been demonstrated to be non-irritating, non-sensitizing fungicide and bactericide. This new material imparts no odor or tackiness and virtually no color to fabrics. There are no crocking tendencies. Properties and methods of application are given.

The principles of textile finishing

Emery I. Valko. *Textile Res. J. 22*, 213-22 (1952).

The topical and the energic characterizations have been suggested for meeting the need for a new systematics of finishing. The first is based on consideration of the site of the finish in the textile (interyarn-intrayarn, the interfiber-intrafiber); the second on consideration of the forces acting between finish and fiber. The significance of the spatial and energic factors is discussed in relation to some finishing processes.

DYEING AND PRINTING E

Behavior of acid dyes in steaming

R. E. Pomfret. *Dyer 107*, 187-8 (Feb. 8, 1952).

Experiments on acid dyes during steaming included pressing a film of starch, containing dye, into contact with water soaked cellophane sheet and immersing the sample in steam. Acid dyes, substantive to cellulose, were found to behave in the same manner as ordinary direct dyes when printed on cellulose.

Acid dyes, which gave aqueous solutions with the dye existing as "small" aggregates, showed no substantivity for cellophane and distributed

themselves between the cellophane and starch.

Acid dyes, which gave aqueous solutions with the dye existing as "medium size" aggregates, were found satisfactory in printing viscose rayon using urea as an assistant. The per cent exhaustion was found to increase up to a maximum and then decrease during steaming.

Acid dyes which gave aqueous solutions with the dye existing as "large" aggregates, gave little transference of dye when immersed in steam, but gave substantial transference of dye to the cellophane when placed in pyridine vapor.

Boric acid in dyeing

C. F. Ward, C. S. Groves, & W. E. Saxby (Nottingham), Ltd. Brit. P. 662,795. *Dyer 107*, 117-18 (Jan. 25, 1952).

In dyeing wool textiles in aqueous baths either by the neutral dyeing process, or by chrome-dyeing, borac acid and/or borax or another alkaline salt of pyroboric or metaboric acid is said to control the pH value of the baths with some advantages. In an example given, wool dyed with boric acid in the bath had a superior degree of levelness of shade, even penetration, and a good handle.

Care and handling of back greys

Richard Carter. *Textile Industries 116*, 139-43 (Mar. 1952).

The back grey in textile printing absorbs the surplus print paste from the back of the printed pieces so as to eliminate edge flushing of patterns and general smearing of the back of printed pieces, to speed up drying, and to minimize washing-off difficulties. Suggestions for the care and handling of back greys in roller printing, screen printing, and block printing are discussed. Suggestions include such things as: avoiding seams as much as possible; using good quality cloth for greys; washing greys often in screen printing; keeping greys free of creases; washing greys in liquors previously used to wash prints; using saturated steam in drying; etc.

Continuous dyeing of new synthetic fibers

W. Geo. Parks. *American Dyestuff Reptr. 41*, 223-41 (April 14, 1952).

An investigation was made to develop continuous dyeing methods for fabrics composed of the new synthetic fibers, Dacron, Orlon, Acrilan and Dynel. The application of various classes of dyes and the influence of heat on them were studied. Preliminary experiments showed promising results with vat dyes and their leuco ester. Successful plant trials were made by the

following methods. A modified method of applying the leuco esters of vat dyes; continuous application of cuprous ion on acrylic fibers; a process for applying vat dyes to Dacron; a surface-stripping process after dyeing which improved the crock fastness of vat dyeings.

Dispersions for pad dyeing

Copeman Laboratories Co. & H. Y. Jennings. Brit. P. 663,853. *Dyer 107*, 191-2 (Feb. 8, 1952).

Fluent dispersions, particularly valuable in pad dyeing, have continuous aqueous phase, and the disperse phase is composed of relatively fine droplets of a solution of a water-insoluble resin in a water-insoluble organic solvent. The droplets also contain a water-insoluble dye and an emulsifying agent.

Dye fixing product and process and treating of textiles therewith

Myrtle Joanne Spangler (to Dan River Mills Inc.) USP 2,576. 241, Nov. 27, 1951.

A process of producing a condensation product suitable for fixing substantive dyes on textiles, comprising reacting dicyandiamide with a copper salt selected from the group consisting of copper chloride and copper nitrate, to effect hydrolysis of the dicyandiamide and the combining thereof with the copper to produce a copper complex, and then reacting the copper complex with formaldehyde in solution of an acid selected from the group consisting of hydrochloric acid and nitric acid to produce a condensation product of dicyandiamide, copper complex and formaldehyde.

Dyed and crimped staple

Brit. Celanese Ltd. Brit P. 653,575. *Dyer 107*, 193-4 (Feb. 8, 1952).

Production of dyed and crimped cellulose acetate staple fiber is described in this patent. The dyeing method comprises a very short period of immersion of the tow in the liquid so that it is possible to effect the dyeing at speeds comparable with those of the other stages of crimping and processing.

Electrolytic stripping process

Fabric Research Laboratories Inc. & E. R. Kaswell. Brit. P. 652,899, *Dyer 107*, 193 (Feb. 8, 1952).

A color stripping solution is derived directly from the region of the cathode of an electrolytic cell and contains, in this region, vanadium, titanium and chromium ions in a low valence state. Electrolysis of the cell liquid is carried out at such current density that reduction of vanadium

titanium or chromium ions in the cathodic region occurs at a rate at least as great as that at which they are oxidized, by their action in reducing the color on the material, to a higher valence state. The stripping power of the solution is thus maintained at a more or less constant level because the ions so oxidized are again reduced by the current to a lower valence state. The process is applicable generally to dyed animal fibers, such as wool, fur or hair, and is said to strip colors which have been extremely difficult to strip with existing processes. The preferred method for carrying out the process is to expose the wool to a continuously circulated stripping medium which is reduced in a separate zone and then circulated to a stripping zone. Spent liquor may be returned continuously to the regenerating zone where the oxidized ions are again reduced electrolytically.

Heated printing tables

Naamlooze Vennootschap P. F. van Vlissingen & Co.'s. Katoenfabrieken. Brit. P. 662,-181. *Dyer 107*, 192 (Feb. 8, 1952).

A screen printing table for drying fabrics after printing has a concrete table top, preferably placed on rollers arranged on the upper sides of bearing walls to permit the necessary expansion. Heating tubes are embedded in the table top and are connected with a supply pipe. The heating tubes are fed by the supply pipe at a number of points, preferably with hot water.

Improved wash fastness

Courtaulds Ltd., A. S. Cluley, & T. G. Allen. Brit. P. 652,985. *Dyer 107*, 194 (Feb. 8, 1952).

Textiles printed with water soluble dyes are claimed to have improved wash fastness by using, in the printing paste, a water insoluble condensation product of cynamide and formaldehyde, and a compound which will dissociate on heating to give an acid which enables the condensation product to dissolve. Suitable compounds which will dissociate on heating to give an acid are ammonium formate, ammonium acetate, ammonium salicylate and ammonium oxlate.

Levelling on nylon

H. R. Hadfield. *Dyer 107*, 209 (Feb. 8, 1952).

Quantitive tests on the dyeing of nylon with level dyeing acid dyes have shown that at 95°C, the addition of Glauber's salt increased the levelling on nylon, but with an increase too small to be significant. Further tests using Carbolan Salt A showed that with some acid dyes, this anionic

agent produced significant improvement in levelling, and that with some other dyes, particularly the disulfonated dyes, this agent produced a large increase in levelling. At the same time it was found that the exhaustion of the dye onto the nylon was diminished.

Modern continuous deying processes

M. R. Fox. *Dyer 107*, 188-9 (Feb. 8, 1952).

High output coupled with minimum operating costs is the object of continuous processing, and to be of maximum value continuous dyeing systems must attain the highest standards of durability, fastness and perfection. A brief discussion is given of the pad steam process, the Williams unit the hot oil processes, and the Standfast molten metal process and their advantages and disadvantages.

Molten metal tests

R. W. Speke. *Dyer 107*, 111 (Jan. 25, 1952).

Results of experiments by I.C.I. on leuco-vat dyeing by the molten metal process showed that this method was a technically ideal continuous vat-dyeing process with the only limitation being in the dyeing of heavy or tightly woven fabrics where there were penetration difficulties. These difficulties were found to be overcome by prepigment padding. Other conclusions drawn included: economy in the consumption of reducing agents; variations in running speed did not influence shade and fastness properties, provided the dye was not in excess in the liquor; penetration was superior to normal jig dyeing but inferior to pigment padding followed by jig reduction, etc.

Printing furnishing fabric

A. Lightfoot. *Dyer 107*, 186-7 (Feb. 8, 1952).

A discussion is presented on the preparation, printing, dyes used, and finishing of furnishing fabrics, i.e., window hangings, furniture covers, bed quilts, table cloths, etc.

Process for printing textile fabrics

Carlo Albini-Colombo. USP 2,583,286, Jan. 22, 1952.

In a method of transferring a colored design onto fabrics, the steps of applying a film of an insoluble glue to one side of a paper sheet, prepared from a resinous half size pulp weighing 60-70 grams per square meter, thereupon coating the glue film with a layer of a fatty substance, color-printing the design on the treated side of the paper sheet, supporting the designed paper sheet on a paper strip made of a stronger paper than that of the sheet, superposing a wetted

fabric on the designed paper sheets and subjecting the fabric and the strip to the simultaneous action of heat and pressure.

Screen printing without squeegee

J. Courtney. Brit. P. 652,449. *Dyer 107*, 194 (Feb. 8, 1952).

Improved results in screen printing are said to be obtained by placing the stencil screen over the textile to be printed, placing a layer of felt pad applying pressure to the impregnated layer over the screen, impregnating it with ink or color, of felt by means of rollers. The invention is applied to a printing machine described in Australian P. 125, 712, in which a squeegee device is used. In this case rollers are secured to the squeegee mounting to replace the squeegee.

Standfast process

Standfast Dyers & Printers. Brit. P. 663,066. *Dyer 107*, 192 (Feb. 8, 1952).

A further patent dealing with the molten metal process states that suitable anti-oxidants will retard the formation rate of alkali sulfides from sodium hydrosulfite. The hydrosulfite decomposition products tend to attack the molten metal of the bath and form a sludge on the surface. Use of the anti-oxidants does not appreciably lower the speed at which the hydrosulfite reduces vat dyes, and it is thus possible to use hydrosulfite solutions at high temperatures. Antioxidants mentioned include: reducing sugars, benzaldehyde, and tannic acid and related compounds such as gallic acid.

Stenter printing machine

J. Dungler. Brit. P. 661,855. *Dyer 107*, 117 (Jan. 25, 1952).

A fabric printing machine, designed so that the printing remains visible to the operator at all times, is claimed to give simplicity and high working speeds. The machine comprises a stenter arrangement which includes a series of rotary printing couples, followed by a drying apparatus. It is also possible to incorporate a drying operation between any two of the printing couples, and a final steaming process.

Trends in dyeing technique

J. W. Reidy. *Dyer 107*, 113 (Jan. 25, 1952).

A brief review is presented of some of the developments in dyeing methods of the last 20 years.

Up to ten colors on Italian automatic screen printing machine

Anon. *Dyer 107*, 128, 133 (Jan. 25, 1952).

A continuous fully automatic screen printing machine, capable of printing up to ten colors and manufactured by Comerio Ercole, has a patented form of remote control equipment which enables one operator to regulate each of 14 electric motors independently from a central control box. The fabric enters the machine from a winder-off and expander under adjustable tension and passes through a "glueing" unit, equipped with trough and rollers, where adhesive is applied. The fabric is then pressed by a steam-heated bowl against a belt conveyor, constructed of plastic material over a metallic net core and operated by 2 rollers running over ball bearings in blocks fixed at the inlet and outlet frames. The printing table is made of metal plates with elastic rubber surfaces. Printing units are placed at intervals along the belt with each screen having a lifting and lowering mechanism directly driven by motors. The squeegees, which have a wooden rod and rubber blade and run along cast-iron cross bars, are also controlled by individual motors with special arrangements provided to vary the number of strokes and pressure of the squeegees. The printing units are movable by means of grooved rollers running over ball bearings in tubular ways and are locked by hand-wheels. At the end of the belt, the fabric is withdrawn by a special guide roller, passes over rollers in an insulated chamber where it is subjected to hot air on both faces, and is then cuttled. The drier has its own motor. The conveyor is cleaned after every printing operation by rubber scraping blades, cleaning brushes, and water sprays and then dried by steam-heated chests.

Vehicle aids printing with contrasting brilliant colors

Staff. *Textile Industries 116*, 198-9 (Mar. (1952).

G-E Glyptal alkyd resin 91033, a new textile printing vehicle, keeps pigment particles apart, restraining the color particles from clustering together. The resin also prevents pigment particles from running into the spaces between the fibers of the cloth. As a result, brilliant sharp colors are possible with high color yields. Prints made with the resin are reported to have exceptional wash and crocking resistance. Mfg: General Electric Co.

SPECIAL FINISHING F

Apparatus for treating textile fabrics

Charles G. Hatay (to E-Z Mills, Inc.) USP 2,581,018, Jan. 1, 1952.

Apparatus for relieving internal stresses in a length of textile fabric, which comprises a container for a liquid wetting agent, a conveyor for moving the fabric lengthwise through the liquid in a submerged path under substantially tensionless and compressionless conditions, a guide plate located in the container below the liquid surface but above the path, and means for introducing air into the container below the path to urge the fabric upward against the guide plate and thereby spread the fabric.

Apparatus for shrinking and condensing textile fabrics

Franklin Chatfield (by mesne assignments to Frank R. Redman) USP 2,583,630, Jan. 29, 1952.

In an apparatus for shrinking and condensing tubular knit textile fabrics, a pair of power driven spreaders arranged in tandem and over which the tubular knit fabric is fed, one of the spreaders flattening the tubular fabric and delivering it onto the second spreader, the second spreader being relatively wider than the first spreader and laterally stretching and widening the fabric to cause its stitches to expand in a direction crosswise of the wales of the fabric.

Application of flock by pneumatic means

Heberlein & Co., A. G. Brit. P. 662,481. *Dyer 107*, 118 (Jan. 25, 1952).

The whirling up of short staple flock and its penetration into lacquer coated textiles is claimed to be considerably improved by suitably selecting a vibration frequency and amplitude for the apparatus used. The best frequency and amplitude depends on the type of flock fibers used with smaller frequencies and amplitudes necessary for lighter fibers. A method of producing controlled vibrations consists of a single vibration element through which air is blown by means of a fan with the air supply pulsated by an interrupter consisting of a shaft with two blades. The shaft is driven by a constant speed motor through variable speed gearing, regulated by an infinitely variable knob. The air discharge opening of the vibration element is provided with a damper for regulating the air discharge and adjusting the amplitude of the vibration. The surface of the vibration element is a tightly stretched rubber sheet which may be tensioned in all 4 directions. The interruption of the air supply causes a pulsating air pressure in the vibration element which vibrates the surface at the frequency of the interruption.

Evaluate finishes on basis of fabric performance

Ralph F. Nickerson. *Textile Industries 116,* 1677 (Mar. 1952).

The resin retention test as a method of determining the efficiency of urea resin finishes on viscose rayon is said to have little real value since it requires the assumption that retention is directly correlated with fabric performance. It has been shown that urea resin catalysts in general use give similar resin retentions under identical conditions, and strict correlation between shrinkage control and resin retention has not been found. In addition, the test lacks precision and may not even measure the wash fastness of urea formaldehyde resin reliably. The need for evaluating finishes on the basis of fabric performance with a simple wash shrinkabe test used is stressed.

Hosiery finishing system promises better dulling

Staff. *Textile Industries 116,* 85 (Mar. 1952).

The new Filaseal system for finishing women's nylon hosiery combines a resin finish, a dulling agent, an exhausting agent, and a wax lubricant, all applied in one bath after the dye is dropped. The finish can be modified to be either soft or hard, with or without scroop, and firm or elastic. Samples finished with the system are said to have better dulling, increased snag and pull resistance, and have retained their shape throughout handling. Mfr: Amalgamated Chemical Corp.

Method and apparatus for drying sized or otherwise impregnated textile material

Ralph A. Rusca & George J. Kyame (to U. S. of A.) USP 2,478,7744, Dec. 18, 1951.

A continuous single pass process of drying a material such as coated or impregnated continuous textile warps, sheets, or webs comprising continuously passing a number of closely spaced continuous strands of the textile material through a radiant heating zone in which they are exposed to the rays from a gas-fired infrared generator, controlling the ratio of combustible gas to oxidizing gas supplied to the generator and to the radiant heating zone to obtain a neutral, or oxidizing, or reducing atmosphere, at will, combustion from the exit hot products of combustion from the radiant heating zone into and through a lower temperature heating zone, continuously passing the strands from the radiant heating zone into the low temperature heating zone, throughout which zone the strands move parallel to and in the same direction as, and in contact with the exit products of combustion, the speed of drying in the lower temperature zone being

raised by decreasing the cross-sectional area of this zone with respect to the radiant heating zone to increase the velocity of the products of combustion passing through the lower temperature zone, and by spreading the strands farther apart in the inlet region of the lower temperature zone than in the radiant heating zone, and thereafter venting substantially all of the gases from the system without recycling, the lower temperature zone being under negative pressure produced by the drawing of the combustion gases therethrough.

Permanent anti-fungus, anti-mildew, and anti-deterioration agent

Staff. *Textile Industries 116,* 198 (Mar. 1952).

Kemysal, an anti-toxic, anti-disease, and anti-bacterial chemical developed by the Flax and Fiber Institute of America, is reported to permanently protect fabrics of natural and synthetic fibers against fungus, mildew, and deterioration.

Preshrinking and setting tubular fabrics

Samuel Cohn, Jules G. Walter, Eugene Cohn (to Samco Holding Corp.) USP 2,589,344, Mar. 8, 1952.

A method and apparatus for preshinking and setting tubular textile fabrics by means of a spreading device onto which the fabric is fed faster than it is withdrawn so as to relax the fabric and by applying steam to the relaxed fabric.

Preshrinking and setting tubular fabrics

Samuel Cohn, Jules G. Walter & Eugene Cohn (to Samco Holding Corp.) USP 2,589,345, Mar. 18, 1952.

A method of preshrinking tubular textile fabrics by advancing the fabric in a flattened form, relaxed and transversely riffled, applying steam to the riffled and relaxed fabric and then winding the fabric while relaxed and longitudinally compressed.

Process for whitening fabrics

Hans Meyer (to Lever Bros. Co.) USP 2,590,485, Mar. 25, 1952.

Yellowed fabrics are whitened by treatment with a solution in borax and umbelliferone.

Setting a knitted fabric

Richard Evans. USP 2,588,624, Mar. 11, 1952.

A knitted fabric is set to a substantially fixed size by fully relaxing the fabric while moist and then drying the fabric in fully relaxed condition

while holding substantially every portion thereof in fixed relation to every other portion thereof.

Removing the curl from selvedges of acetate rayon warp knitted fabrics

American Viscose Corp. Brit. P. 664,612, Jan. 9, 1952. *Brit. Rayon & Silk J. 28,* 66-67 (Mar. 1952).

Stabilizing treatment specified consists of leading the fabric in flat or open-width downwards over a device for uncurling the selvedges so that these are at once held flat between horizontally moving belts which carry the fabric in its open width fully submerged in a vat of boiling water; the fabric then leaves the belts and is drawn upwards out of the liquor to be plaited down outside of the vat. The time of treatment in the boiling water can be adjusted to that the emerging fabric is "annealed" or stabilized so sufficient to cause the selvedges to curl or creases that there are no latent forces left within it to form in subsequent wet processing.

Treatment of flammable materials to impart flame resistance thereto, compositions therefor, and products thereof.

The method which comprises impregnating a textile material to be rendered flame-resistant with an equeous composition containing the following initial ingredients in the specified proportions by weight: (1) from 2 to 20 parts of a heat-curable member of the class consisting of methylol melamines, methylated methylol ureas, mixtures thereof, and water-soluble reaction products of the methylol compounds and of mixtures of the methylol compounds; (2) from 10 to 35 parts of methylol dicyandiamide; and (3) and oxygen-containing acid or phosphorus in an amount which is equivalent based on phosphorus content, to form 5 to 30 parts of 85% H_3PO_4; drying the impregnated textile followed by heating the dried textile at a temperature within the range of about 250°F. to about 400°F.; and removing any residual water-soluble substances from the resulting textile.

Useful life of tobacco shade cloth tripled by new process

Staff. *Textile Industries 116,* 114 (Mar. 1952).

A weather-resistant finish for cotton cloth used to shade seed beds and growing tobacco plants has been developed by the Southern Regional Research Laboratory. The finish is lead chromate, an inorganic yellow pigment, which screens out the damaging rays of sunlight, one cause of rapid deterioriation of cotton in outdoor use. The service life of the cloth is said to be at least tripled by the process.

Waterproofing cellulosic fabrics

Rene L. Lehman & Josef Lintner (to Bozel-Maletra So. Indus. de Produits Chimiques) USP 2,588,640, Mar. 11, 1952.

Cellulosic fabrics are rendered water-repellent, strong and unshrinkable by treatment with a condensation product of a long chain fatty alcohol with a condensation product of an amide, such as urea, melamine or ozamide successively with glyoxal and formaldehyde.

Waterproofing fabrics

Firth L. Dennett (to Dow Corning Corp.) USP 2,588,365-6-7, Mar. 11, 1952.

Organic fabrics are rendered water-repellent by treatment with a methylpolysiloxane with or without a methyl-hydrogen-polysiloxane in a particular manner.

Instruments and Instrumentation G 2

A method of repetitive longitudinal sectioning of cords and fabric for microscopic examination

S. Jack Davis. *Textile Res. J. 22,* 192-99 (Mar. 1952).

A new device and technique for making repetitive longitudinal microscopic sections of discrete and predetermined thickness from cords and fabrics is presented. The device provides for mounting fabrics, which is embedded in resin, and elevating it by calibrated increments to a selected distance above the level of a cutting surface which guides a razor blade in cutting a section for microscopic examination. Examples illustrating the possibilities of such a technique in determining cover factor at various levels in fabrics, of determining the degree and character of penetration of various additives, and of the mechanism of particle retention in fabric filtration are given.

Abrasion tester

Harry F. Clapham. USP 2,590,839, April 1, 1952.

A device for testing fabric wear comprising a rotating reel having radial arms for supporting a plurality of folded pieces of fabric samples at the periphery of the reel and an arcute abrasive surface arranged to be rubbed by the samples during rotation of the reel.

Fabric testing machine

G. L. Brown. *J. of Textile Inst. 43*, 119-22 (Mar. 1952).

A detailed description of an inclined plane machine for testing fabrics under constant rate of loading conditions. The machine has a load capacity of 20-200 lbs. The main features of the machine are discussed and shown in diagrams.

Inertialess weighing system for existing Scott tensile strength testers

Staff. *Textile Industries 116*, 83 (Mar. 1952).

An electrical weighing system for Scott testers of the pendulum type replaces the conventional pendulum type head and recorder and converts the tester from constant-speed-of-pull operation to constant-rate -of-extension. The deflection of an elastic spool, which is converted to a voltage and measured by a potentiometer with recording chart, absorbs the resistance of the specimen or load. Extension of the specimen is shown vertically and load horizontally on the chart which becomes a stress-strain diagram directly. Advantages include: elimination of inertia from the weighing mechanism; a constant inertia from the weighing mechanism; a constant rate of extension can be applied; and new studies of progressive test stages possible due to flexibility of drive and recorder rates and wide range of chart speeds. Mfr: Scott Testers, Inc.

Mechanical cotton fiber blender

Staff. *Textile Industries 116*, 123-4 (Mar. 1952).

The mechanical cotton fiber blender, developed by the Department of Agriculture for preparing samples for testing or measuring the physical properties of cotton fibers, feeds a sample of cotton onto the surface of a wire-clothed cylinder to produce a bat in which the fibers are distribujustable feed plate in combination with a fluted ted at random in relatively thin layers. An adfeed roll feeds the sample to a rotary blending cylinder covered with stripper wire clothing. The feed plate extends under the feed roll, its nose projecting toward the blending cylinder, and is plate hinged to the bottom of the feed plate. The make up of the feed plate proper and an extension extension plate is closely fitted to the bottom surface and to the nose of the feed plate; and it provides the means for adjusting the feed mechanism for blending short or long staple cotton. Maximum blending of a cotton sample without appreciable fiber damage can be obtained by passing the cotton through the blender 3 times.

Four 10-gram samples can be machine-blended in approximately 1 hour.

Tensile tester

Walter Gegenschata. USP 2,590,398, Mar. 25, 1952.

A device for measuring the tensile strength of a thread which also includes means for feeding successive lengths of threads into the testing machine.

The Sander wear testing machine

Hans Knopp. *Melliand Textilber. 33*, 237-8 (1952); *in German.*

The Sander Wear Testing Machine is of the combined diagonal and longitudinal type with additional attachment for edge rubbing, wet rubbing and rubbing under the influence of heat. Rubbing is either dry or wet by means of corundum rods at a pressure which can be adjusted between O and 350 g/cm.

TEXTILE MILLS — H

Appraisals

H. H. Walker & T. O. Ott, Jr. *Textile Industries 116*, 126-29, 214-16 (Mar. 1, 1952).

Appraisals are essential for efficient management today since they present facts and values which can be analyzed and used in connection with policy making functions. They are based on a careful inspection and inventory of property and evaluate the reproduction cost new, the amount of accumulated depreciation, and the remaining value of a property. The principal uses of appraisals include: Insurance appraisals, appraisals for income tax purposes, appraisals for financing, appraisals for purchase or lease of property, for mergers and consolidations, for cost accounting, for settlement of estates, for condemnation of property, and for patent valuation. These are discussed, and a typical appraisal procedure for a textile mill is described.

A handy tool for cutting belts

Ernest Bridges. *Textile Industries 116*, 115 (Mar. 1952).

Construction details are given for a belt slitter which can be made in a mill shop. The tool is useful for cutting leather belting into strips of various widths and length.

B. M. T.: A new way to study work loads

John Henderson. *Daily News Record*, 35, 38 (Mar. 10, 1952).

See front section.

Color indicates hosiery sizes

Staff. *Textile Industries 116,* 185 (Mar. 1952).

segregation of hosiery into lots according to size may be greatly facilitated by using a color code on tickets, tied to bundles of hosiery, to indicate sizes. For example: purple, size 8; red, 8½; yellow, 9; etc.

Current developments in textile industry

Anon. *Monthly Review,* Federal Reserve Bank of Richmond, 8 (April 952).

See front section.

Industry's anthrax incident rate up

Roger Conant. *Textile Industries 116,* 120-2 (Mar. 1952).

The majority of anthrax cases in this country are found in the carpet industry which uses wools obtained mainly from the primitive areas of the world. This disease which is transmitted to man by contaminated hides, hair and wool results in death by blood poisoning if left untreated. The symptoms, treatment, and prevention of anthrax in mills by employees and by the mills themselves are discussed.

New blends pose problems for dry cleaners

News Release. New York Neighborhood Cleaners Assoc. April 7, 1952.

See Business Section.

Round-up; textile flammability

Staff. *Textile Industries 116,* 157, 159 (Mar. 1952).

Legislation to restrict the sales of highly flammable materials, according to the U. S. Testing Co., should be at a national level and should take into consideration laboratory techniques of testing. Factors which must be understood in determining the hazardous nature of a material include not only type of fiber, but also arrangement of fibers in yarn and fabric, the amount of napping, and type of textile finish.

In regard to textile flammability, the nationwide sale of explosively inflammable twin jacket sets and the Wool Bureau's request for FTC action is discussed. Safety standards for children's clothing and the testing of nylon products for flammability are also discussed.

Textile training

Staff. *Textile Industries 116,* 89-112 (Mar. 1952).

Methods and systems which have proved useful in employee training are described under the following headings: Induction training, Operator training, Trade training, Supervisory training; Executive training, and Training and the law. A survey of 10 mills in the Southwest, entitled "Textile Training" by Ivan Yen-Ta Feng, is included in the report in an attempt to determine the extent to which the principles of Scientific Management are being applied to this segment of the textile industry.

Waste control. Article 8

Ramon Parks. *Textile Industries 116,* 130-1 (Mar. 1952).

In the textile industry there is not only waste of material but also waste of manpower and waste of machines and equipment. These three kinds of waste are discussed in relation to the responsibilities for the overseer in controlling them.

CHEMISTRY AND PHYSICS OF TEXTILE MATERIALS I

DEGRADATION FROM WEATHERING OF TENTAGE FABRICS

W. E. C. Yelland, Harris Research Laboratories, Washington, D. C. U. S. Office of the Quartermaster General. Military Planning Division. Research & Development Branch. (Sept. 1951.) 154 pages, graphs, tables. Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. Mimeo: $4.00.

This report discusses principally the degradative behavior of 12.29 ounce duck exposed outdoors at two locations in the grey state, the mineral dyed state, and with a fire, water, weather and mildew resistant finish. The reaction of these samples to varying climatic conditions and observed. In general, the portion of the spectrum to different portions of the solar spectrum was found to be most responsible for deterioration was the short wave length ultraviolet, but it was also observed that the various finishes were influenced by other bands of the spectrum, as well. At Camp Lee, Virginia, and Miami, Florida—sites representative of temperature and semi-tropical climates, respectively—the samples were exposed both directly to the elements and under filters which permitted the passage of selected wave lengths of light. It was found that, in general, the FWWMR treated fabrics withstood degradation more effectively than either the mineral dyed or the grey. Deterioration in all cases seemed to be the result of hydrolysis and oxidation of the cellulose. Correlation was estab-

lished between fabrics exposed in the form of panels and those exposed in the form of tents to determine whether the more convenient panel exposures yielded reliable data. Degradation of the fabrics was determined initially on the basis of exposure time and later, on the basis of the solar radiation received. It was found that the latter procedure was more reliable because of the differences in solar radiation at the two locations.

Distribution of resin finishes in fibers

M. Kramer and W. Graeser. *Melliand Textilber. 33*, 226-29 (1952) ; *in German.*

This paper deals with the radial distribution of synthetic resins applied to crease-proofed viscose rayon and the problem of making this distribution visible at the microscopic cross-sections by dyeing. This paper shows in a new and n more extensive form the suitability of acid dyestuffs with the object of determining the distribution of the incorporated artificial resins. The author points out the possibility of using dyeings with acid dyestuffs on fabrics as criterion for condensing conditions. For this purpose, the Tollens reagent is unsuitable.

Elasticity of synthetic fibers

J. F. Clark. *Dyer 107*, 112-13 (Jan. 25, 1952).

Many synthetic fibers show rubber-like properties at elevated temperatures, and it is felt that a study of these properties would lead to an increase in our knowledge of their structure. Many synthetic fibers contract on heating, e.g. Vinyon, Saran, Nylon,, etc., and since the extent to which they contract varies from fiber to fiber, this contraction is suggested as a means of identification. Tension-temperature experiments on synthetic fibers gave similar results to rubber stretched above 300%, but with the energy changes much greater than those in rubber. The energy changes are thought to be related to crystallinity.

Electrically treating fibers to decrease elasticity and increase tensile strength

S. Blumenthal & Co., Inc. Brit. P. 652,762. *Textile Mfr. 78*, 108 (Feb. 1952).

A method of high frequency electric field treatment of animal fibers or hairs, to decrease their elasticity or springiness and increase their tensile strength and elongation.

When a switch is closed to send current through the supply line, a high frequency oscillating electric field is established so that the roving wound on the bobbin will be subjected to the action of the electric field.

Measuring of inter-fiber friction in slivers

L. J. Postle & J. Ingham. *J. of Textile Inst.* (Trans.) 43, 77-86 (Mar. 1952).

The paper describes an investigation of the inter-fiber frictional forces in untwisted wool and nylon slivers. A short length of sliver is placed in a rectangular channel and is subjected to a range of compressional loads. The force required to withdraw a single fiber from the wad when under these loads is used to calculate an effective coefficient of friction relating to fibers in contact. The data are for oil-free wool and nylon fibers.

New work on keratin

J. B. Speakman. *Dyer 107*, 185 (Feb. 8, 1952).

Recent work on structure and reactivity of Keratin has revaled surprising regularities in the composition of Keratin. Keratin fibers of widely different cystine content have been found to have molecular weights which vary only to a slight extent and the terminal amino groups have been found to be derived from valine, alanine, glycine, serine, threonine, aspartic acid and glumatic acid.

Studies of changes in fiber length in formic acid solutions showed that formic acid first penetrates the amorphous region causing contraction which is followed by expansion when the grids of the crystallites are separated. This amorphous-crystalline ratio is of great significance in dyeing.

Chemical evidence has been found to support the setting theory that setting is due to the breakdown and re-formation of hydrogen bonds in steamed fibers.

Polyarographic determination of acrylonitrile

Wilmer L. Bird & Cecil H. Hale. *Anal. Chem. 24*, 586-7 (Mar. 1952).

A procedure for the analysis of aqueous solutions or determination of purity of acrylonitrile wherein the acrylonitrile is reduced at about —2.05 volts against a saturated calomel electrode with tetramethylammonium iodide as the supporting electrolyte. The polarographic method is very selective. It is just as accurate at the hydrolysis method but is much less time-consuming.

Practical application of servo-mechanism techniques to a process control problem

S. P. Higgins, Jr. and G. W. McKnight. *Textile Res. J. 22*, 203-13 (Mar. 1952).

The paper demonstrates the application of servomechanism techniques to the solution of a problem in automatic control of industrial process. A typical problem in this field — namely, a flow system — is analyzed by this method and correlated with the results obtained from the actual system tests.

Yarn and fabric density

R. M. Hoffman. *Textile Research J. 22,* 170-77 (Mar. 1952).

Certain of the theoretical aspects of the phenomena of imperfect packing of fibers in yarns and yarns in fabrics are presented. They are placed on a quantitative basis in order to interpret density values. A simplified approach has been employed which approximates the conditions encountered in actual yarns and fabrics.

TEXTILE EDUCATION AND RESEARCH J

Higher education in textiles

G. A. Mobley. *Bobbin and Beaker 10,* 9 (Winter 1951-52).

Outside of the textile industry, one seldom hears of the Institute of Textile Technology, or ITT, as it is more commonly known. This school is to the field of textile research what the Massachusetts Institute of Technology is to Electrical and Mechanical Research. In other words, it is just about as high as one can go.

ITT serves a two-fold purpose for industry — first, it is a clearing house for problems of all kinds which occur in the production of textile goods and second, it serves as a training center for men interested in textile research.

Since the University of Virginia is very close, the Institute can draw upon its staff of outstanding educators for the courses in English, Mathematics and Engineering. Most of the subjects relating to research, however, are taught by the Institute staff.

The Institute, only one of its kind in the United States, has provided a means of saving untold sums of money, and has also provided men well trained in research, who are capable of assuming the responsibility of directing the research carried on in the mills, and who can cope with the constantly arising problems of industry which a less highly trained man would find insurmountable.

Pass on results of research to trade

Buck Gunter. *Daily News Record,* 2, 14 (April 18, 1952).

In a period of depressed market conditions

such as this, textile company research technicians should plan their programs to achieve "better, cheaper or new" products, processes and services and turn over fundamental research to outside agencies, Richard T. Krof, vice president and director of research, at its two-day spring meeting at Clemson College, told members and guests of the Fiber Society.

"Start selling research," as a means of overcoming a lack of understanding by some management of scientific programs. He said that management generally is interested in getting facts and making decisions as quickly as possible, but often top executives cannot read and interpret the technical language of research men.

The objective of research departments, he asserted, is to "instructively contribute to the profits of a company, both from the long and short terms point of view." Some companies cannot afford research departments because of the expense involved. In this event, it was suggested that these companies support textile research institutions.

It is important, he declared to recognize that research has a right to certain percentages of the sales dollar and of fixed assets.

Benefits of membership in ITT

Staff. *Textile Industries 116,* 113-14 (Mar. 1952).

In a report on the annual membership meeting of the Institute of Textile Technology held in January, a digest is given of a panel discussion on "Practical Benefits Obtained by the Mills from Membership in the Institute."

Gordon Research conference for 1952

Anon. *Chem. & Eng. News 30,* 1438, 1440, 1442, 1444-6 (Apr. 7, 1952).

The Gordon Research Conferences will be held June 16 to August 29 at Colby Junior College, New London, New Hampshire. The programs for the various sections are given. The following sections may be of particular interest: Organic Coatings, June 16-20; Elastomers, June 30-July 4; High Polymers and Ion Exchange, July 8-11; Textiles, July 14-18; Corrosion, July 21-5; Statistics in Chemistry, July 28-August 1; Analytical Chemistry, Aug. 11-15.

Open House . . .

Institute Holds Open House For Charlottesville Residents

Textile science and research were featured at an Open House Wednesday, May 21, at the Institute of Textile Technology, in Charlottesville, Virginia. Approximately 500 people attended the event.

The Institute grounds and Administration Building were open to the public, but the main interest of the visitors was the Applications Building where the scientific exhibits were displayed.

The visitors saw cotton yarn running through an electronic instrument which counted automatically the tiny imperfections in the yarn. The electronic Uniformity Analyzer and Lap Meter were also demonstrated, showing how these instruments measure the uniformity of various textile products.

The series of electronic instruments were all developed at the Institute under the leadership of Dr. E. J. Bernet, Head of the Physics Division.

Cotton mill machinery was also in operation in the Textile Engineering Division, headed by J. E. Dougherty. The visitors saw yarn being spun by C. J. Morris and Cecil Cook.

Of special interest was the series of cotton fiber and other testing methods demonstrated by T. L. W. Bailey, Jr., and H. A. Mereness.

The Chemistry Division, under the direction of Dr. W. J. Hart, Dr. W. H. Martin, Leo R. Hubbard, and Miss M. L. Wetzel, demonstrated various equipment used in Institute research, including the equipment used in the chemical modification of cotton. This process is said to render cotton fabric permanently mildewproof and heat resistant. A series of tests used by the Institute in soil deposition studies and in detergent-evaluation analysis was also demonstrated.

Other Institute staff members participating in the Open House demonstrations were as follows: Don Nieman and J. W. Johnson, Jr. operated the electronic instruments; John E. Bevilacqua demonstrated Institute methods of mechanical design and drawing; R. B. Sanford gave a short talk on textile microscopy. Charles E. Douglas showed the automatic Yarn-Strength Tester, while the handling of visitors and tours through the exhibits was accomplished by Dr. L. H. Hance, Elaine Gardner, Ruth Brant, May Colver, Mary E. Emerson, Nancy Trimble, Richard P. Barber, Isaac Jarvosky, Lawrence Legere, Earl Nickerson, Arthur Pendleton, Robert Seid, Albin Turbak, Theodore Williamson, Jr., J. A. Garrett, Burt Beverley, W. L. Critzer, Fred Breeden, and L. S. Gooch.

Open House . . .

Dr. E. J. Bernet (shown above at left) developed the Institute's series of electronic instruments, one of which is being demonstrated above at the Open House. This new instrument is at the right of Dr. Bernet's hand. It is known as the Imperfection Counter, and its function is to count automatically the neps and other tiny imperfections in cotton yarn. Shown at the left is the ITT Uniformity Analyzer, into which the Imperfection Counter and other ITT instruments simply will be plugged. T. L. W. Bailey, Jr., is shown at right demonstrating the former visual method of counting imperfections on yarn boards.

Leo Hubbard demonstrated the modified Terg-O-Tometer for visitors at the Open House. The Terg-O-Tometer was modified by the Institute for special wash tests in connection with the research project on the dry cleaning of cotton fabrics. This instrument permits the chemist to wash soiled fabric under controlled conditions.

Open House . . .

1. An Automatic Cotton Colorimeter is one of the new tools used by modern mills to aid in the grading of cotton, Tilly Bailey explains to Dean I. F. Lewis of the University of Virginia, one of the visitors at the ITT Open House. J. L. Vaughan, Institute President, is at right.

2. Bill Martin starts up the laboratory finishing "range" for a group of visitors, showing how the Institute can now finish cotton fabrics so that they are permanently rendered mildewproof and heat-resistant.

3. J. E. Dougherty and C. J. Morris operate a spinning frame for the benefit of another group of visitors. Mal Bowden at Dougherty's left.

4. L. H. Hance described the weave-room equipment for another group of visitors.

5. T. L. W. Bailey, Jr., talks to another group on ITT's use of various fiber-testing methods, demonstrating the careful procedures now used by textile mills in the control of raw-material quality. Jack Compton at Bailey's right.

6. John Bevilacqua was caught at work on his famous ITT design, but his contribution to the Open House was a demonstration of methods used in mechanical design and drawings.

Open House . . .

L. H. Hance (above) guides a group of Cub Scouts through the intricacies of cotton sampling. This group of Scouts was among the first to be shown through the various exhibits.

C. J. Morris (left) and Cecil Cook (right) aided Gene Dougherty in preparing the machinery down in the Textile Engineering Section for the Open House visitors.

Some of Member Mill representatives and guests are shown at the April Membership Meeting, at which the results of the "Seventeen Mill Tests" were explored, in cooperation with the National Cotton Council and the American Cotton Manufacturers Institute.

6

Business Views of the Month

SYNTHETIC—COTTON BATTLE BOON TO CLOTH RESEARCH

Competition fans the spark of research in the textile industry as well as in any other business. More progress has been made in the dyeing and finishing of cottons and synthetics during the past fifteen years than had been made in a whole century before. Not always because of an altruistic desire on the part of the mills to reach perfection, but because they had to keep up with, or surpass their competitors' ideas and quality in order to sell goods.

The search for better fabrics has been intensified during the last decade, especially in the laboratories of the cotton industry, which has felt sharper nudgings from man-made fibers recently.

Back in the heydey of cotton when it was truly King, the total percentage of the market it held ran about 85 per cent. This was in the golden period of 1915-1919. Now, of course with the inevitable drying up of some outlets which have switched to synthetics, cotton now accounts for about 69 per cent of the total textile market. This loss appears much greater on the surface than is actually the case. While man-made fibers were capturing a greater share of the total textile market, cotton consumption rose steadily through the years, and apparently is still rising. In 1923, for example, the total consumption of all fibers in the United States was 3,619,500,000 pounds, of which cotton accounted for 3,120,500,000 pounds. By 1950 total consumption of all fiber had jumped phenomenally to 6,578,700,000 pounds, and cotton use to 4,680,-100,000 pounds. So while the encroachment of synthetics into old cotton markets has been steady, the cotton industry has been riding a boom of fabric expansion too.

Cotton men who have appraised the situation believe that the new miracle fibers as well as the basic acetate and rayon yarns may cut still further into the markets of cotton, but what with a good research program on the fire and cooking, there is no real cause for alarm during the next few years.

A good concentration of research and promotion has already paid off well for the cotton industry in some markets where new outlets have been found. Take the case of cotton rugs, which during the early 40s had a yearly take of only 15,000 bales, but which in 1951 used close to 235,000 bales. In women's apparel, which includes skirts and jackets, coats and suits, street and formal wear, the gain has been over 250 per cent in the past decade. Full use was made of the new research products as water repellant, crease resistant, and other finishes which have helped to make cottons attractive.

In answer to the confident predictions of synthetics men that they will push cotton into a minor market position within a few years, the industry through the National Cotton Council, the Cotton Research Clinic, and other agencies interested in promoting and bettering the position of cotton competitively will bear down even more on research during the next few years.

Cotton men have learned a good deal about their product since the war. They know the weaknesses of the fiber as well as its strengths, and they still insist that with hard work, good promotion, and continued cooperation of all industry goods, that they can not only lick the man-make fibers threat, but continue to expand their markets. (Douglas Pidgeon. *N. Y. Journal of Commerce*, Feb. 26, 1952).

MILLS HELPED TO EFFICIENCY BY TECHNOLOGICAL INSTITUTE

Textile research combined with graduate study is saving mills hundreds of thousands of dollars annually and the industry is beginning to feel the long-range effect of the academic program.

The institution which combines these two functions is the Institute of Textile Technology. Its work was detailed at the annual membership meeting, just held, at which more than 100 textile executives heard reports on its work by Roger Milliken, president of Deering, Milliken Company and Chairman of the Institute's board of trustees.

Progress in research on electronic developments, raw cotton studies and mechanical devices to improve standard machinery was reported. Research projects under way include photoelectric aid in cotton grading and standardized testing procedures. **(New York Times,** Feb. 2, 1952).

BALANCE AGRICULTURE WITH INDUSTRY

Today many Southern textile manufacturers are worried over a new type of business threat—one they believe may do serious harm to the state's textile industry unless it is checked.

The threat comes from a program called B.A.W.I. (Balance Agriculture With Industry), which started in Mississippi in the 1930's and has now spread its roots to Kentucky and Tennessee. Alabama, California, Illinois have somewhat similar plans and Massachusetts and Rhode Island are now eyeing the B.A.W.I. plan eagerly.

In essence, B.A.W.I. was first started to promote industries in states which were long on agricultural workers and short on industries. To encourage new plants to locate in their respective states, special B.A.W.I. legislation was passed to permit cities and counties in the various states to issue bonds to build industrial plants—and in some cases to buy machinery—to rent to manufacturing firms.

The company which occupies a B.A.W.I. financed plant and uses B.A.W.I. financed machinery pays off the principal and interest on the municipal or county bonds through yearly payments of rent.

The advantage to the city involved is that it acquires a new industry and with it a fat industrial payroll.

The dangers, according to leading North Carolina textile industrialists are many.

First of all it has been attacked as a tax dodge by which municipalities sell their co-operation to a private business for the advantage of both the city and the private industry.

Since the city or county owns the plant, the firm does not have to pay city or county taxes. In addition, by renting the plant facility the private industry can deduct its whole rental expense as a business expense before taxes. If it built its own plant it could only deduct depreciation on the building as a business expense — and this usually is only two per cent of the cost of the building per year.

Secondly, B.A.W.I. has the added danger of getting some municipalities and counties hopelessly in debt. For example take the city of Elizabethton, Tenn.

Elizabethton has already issued $26,000,000 worth of bonds to finance industrial plants, and reports are that the city is contemplating issuing an additional $25,000,000 in bonds. That would give the 10,000 Elizabethton residents a bond debt of at least $51,000,000.

And what would happen if an unscrupulous firm would move into an Elizabethton plant and then move out a few years later, is something rather terrifying to imagine. Who would pay off the bondholders, or would they be forced to take liens on all the property in Elizabethton?

A third main argument against B.A.W.I., especially now when federal taxes are taking huge bites out of company earnings is the fact that companies operating B.A.W.I. financed plants have very extraordinary tax advantages.

For example, because interest on municipal and county bonds is exempt from income tax, these B.A.W.I. bonds can carry an interest rates as low as two per cent and get plenty of buyers. However, if a private firm wanted to issue its own bonds to finance construction of a new plant, it would have to issue at least four per cent bonds because these bonds would be subject to federal taxes.

A tax expert in figuring the operations of an $8,000,000 cotton mill financed by B.W.A.I. as against the same type mill built under the private enterprise system, came to the conclusion that a B.A.W.I. plant had to make 2.4 per cent profit on sales to be able to break even on operations and stay solvent.

A privately-financed plant, on the other hand, would have to make 4.36 per cent on sales to break even and stay solvent.

It's this last feature which has a great many textile executives up in arms. Right now the textile industry is in a slump, hampered by high taxes, price controls, and by fierce competition for government textile contracts.

Multi-million dollar contracts today can be won or lost by bids that are only a fraction of a cent per yard apart. In such a situation, the competitive advantages of a B.A.W.I. financed plant might spell the difference between a busy plant, humming with activity, and a shutdown mill, its workers on relief.

That is why such textile leaders as Herman Cone, president of Cone Mills Corp.; William Ruffin, president of Erwin Mills, Inc., and Robert Stevens, chairman of the board of J. P. Stevens & Co., take such strong stands against B.A.W.I.

While their attention is mainly on the effect B.A.W.I. will have in the textile field, they are quick to point out that while today B.A.W.I. may be hurting the textile industry, tomorrow it may be a threat to the furniture or steel industries.

Here's the way Herman Cone analyzes the problem:

"In my opinion there are two very serious competitive implications that those of us with our own plant facilities will have to meet in this type of plan. The first of course is the fact that

securities issued by such municipalities or counties will command a lower interest rate due to their income tax free features as against the interest rate on bonds that might be issued by corporations for plant facilities.

"The second feature is the fact that rent paid by a corporation occupying such facilities in sufficient amounts to funds such bonds would be an expense item before income taxes, whereas a corporation could only fund the principal of any of its bonds outstanding before income taxes to the extent that depreciation write-offs are allowed.

"We can anticipate that this method of financing plant facilities will be very attractive to new businesses or to old businesses that are looking for new plant locations, either for expansion purposes or where a move from their old locality is indicated for some reason.

"The broader implications of such legislation would indicate an expansion to other states as competition for industrial development continues. Eventually old business which do not want to move away may be forced by competition to ask their own cities or their own counties to undertake such financing of plant facilities that have heretofore always been considered to be proper sphere for free enterprise.

"We like to feel that our own company, with a large stake in this community, has always been a willing taxpayer, and has been treated accordingly by the taxing authorities of the city, county, state, and federal governments, all of whom have an important stake in the financial well-being of our continued operations. Our company does not want to move its facilities from its present locations, nor does it want to have to ask its local municipal, or county officials, nor its state government to imitate the type of thing that has developed in Mississippi, Kentucky, and Tennessee. However, it is conceivable that, if this method of plant financing expands in the state where it is now legally possible and extends into other states, competitive conditions may create a situation where we must ask for similar financing in order to remain in business. The long-range implications of this system will, of course, result in all plant facilities being financed by local government authorities and will be a long way towards the road to state socialism.

"I have pointed out the dangers of this type of substitute for venture capital. I have no solution to offer except to suggest that those states that are encouraging this sort of thing are building up a Frankenstein that might well destroy that which they are trying to build up—private enterprise."

Robert Stevens, in a recent talk to his company stockholders, said that B.A.W.I. was not only a threat to the future of the textile industry but to "all industry." If allowed to continue unchecked, he said, it will have an adverse effect on private industry.

J. C. Cowan, Jr., Burlington Mills president in an interview, scored B.A.W.I. as a "very dangerous thing, unsound, and contrary to the free enterprise system."

William Ruffin says that B.A.W.I. makes for "extremely tough if not impossible competitive conditions, especially for firms with large fixed investments."

Here are three possibilities suggested by one North Carolina textile manufacturer. He lists these three courses of action:

(1) To have B.A.W.I. outlawed in the states where it is now operating.

(2) If that fails to have B.A.W.I. legislation and programs established in North Carolina.

(3) If both these fail, to locate all new plants in B.A.W.I. states and to start moving present plants into these states.

Many Southern textile manufacturers have their fingers crossed hoping they will never have to use courses two and three.

Eugene Miller, *Textile Bulletin,* 67 April 1952)

WOOL'S BATTLE WITH THE SYNTHETICS

The lad in the advertisement wears a rapt expression, clad as she is in a jersey dress described as "our latest bombshell . . . It breathes with you, keeps you feeling like a snowflake." The phenomenon, says the copy, is produced with a mixture of 86 per cent Orlon and 14 per cent wool. Pictured on other pages are coats of 100 per cent Orlon ("warmer than wool, washable, resistant to rain, wrinkles and moths"), which are "making history." History is being made in many quarters—in rugs that look and feel like wool but are rayon, in men's long underwear that does not shrink or itch, woven as it is of Dynel. The public, which for centuries sat upon, trod upon, and kept itself warm and happy with wool, is being told that it can be happy, even ecstatic, walking on an extrusion of wood pulp or clothing itself in a mixture of adipic acid and hexamethylenediamine (which one copywriter referred to as "100 per cent virgin nylon." Nylon is about as virginal as, say, a dish of spaghetti.)

These are the excited claims of manufacturers

and merchandisers. But the confident voice of science is also heard proclaiming the textile industry's new day. Dr. Roger Adams, of the University of Illinois' Chemistry Department, writes flatly: "an official of the wool industry made a statement recently that the demand for wool as a fabric will never be replaced. These words were spoken by one completely unfamiliar with the potentialities of the chemical research. Just as the automobile replaced the wagon, synthetic fibers will replace the natural fibers. Half the wool now consumed," vows Dr. Adams, will be replaced by synthetic fibers within ten to twenty years . . ."

To such challenge and such advertising, organizations like the Wool Bureau react with a gritty sense of outrage. The Wool Bureau is a protective huddle of U. S. and Commonwealth sheep growers. American sheepmen are expected to put up some $30,000, British Commonwealth interests some $750,000, to develop and promote wool. In his Manhattan headquarters Eugene Ackerman, head of the Bureau, angrily brandishes his spectacles like a spear at history's tide. "We live in a world of promotion of claims," he states. "Wool has never been in a better position." The warp of Mr. Ackerman's arguments may sometimes get lost in the woof of his emotions, but his general position is plain. "Empires have risen on the backs of the humble sheep and have fallen when the wealth they produced passed to other kingdoms." So far, he says, there is no man-made fiber that combines all of wool's good qualities — resilience, "hand," dyeability, and non-flammability. "It has taken the best part of a million years or so to perfect the sheep. It may not take scientists that long to invent a fair wool substitute but to be successful they must produce a fiber containing the very substance of life, which is the basis of wool's greatness. Wool, as always, will remain man's premier fiber."

Rayon, he says, has been around for more than thirty years without hurting wool. And at this point Mr. Ackerman notes that rayon is a "cellulose product only a few steps removed from gunpowder," and with a pair of shears, cuts off pieces of synthetic sweaters and wearing a look of impending disaster ignites them and watches them go up in flames, or melt into driblets like hot sugar water. Wool, as he demonstrates, merely smolders.

Propaganda, claims, and counterclaims, unfortunately, confuse the situation. But in the midst of a world in flames and the marching past of ladies feeling like snowflakes and gentlemen relieved of the need for scratching, some facts are available. They may help settle the question of who is right, Dr. Adams or Mr. Ackerman. (*Fortune*, May 1952, pages 128-32, 144, 147-8, 152).

PRICE CONTROL IN THE TEXTILE INDUSTRY IS LIKE YOU-KNOW-WHAT AT A FAMILY REUNION

Mention the word price control to a Southern textile manufacturer and his hair literally stands on end — and rightly so. For the past several months Southern mill owners, struggling to get their industry out of a serious depression, have been waging a vigorous campaign to eliminate price controls on textiles. And just as vigorously, the government and "red tape" men are fighting to retain them.

The criticism, the Southern textile industry levels at Office of Price Stabilization controls on textiles breaks down into four separate categories:

(1) Controls on textiles are not needed because mill goods are now selling at 25 to 30 per cent below ceiling prices.

(2) The O.P.S. price control program for the textile industry is costing the government hundreds of thousands of unnecessary dollars to maintain special staffs and experts.

(3) Price control is costing the textile industry millions of dollars for special accounting, legal, and statistical work needed in connection with compiling required tables and making required computations for the O.P.S.

(4) O. P. S. price controls on textiles are confusing the textile industry and hampering it from getting out of its present depression and back on its feet. (*Textile Industries*, April 1952).

Technical Highlights of the Month

HIGH LICKER-IN SPEED PERMITS 40% INCREASE IN CARD PRODUCTION

High production on cards is possible through increased licker-in speed. Results have been checked (since June 1951) on cards employing licker-in speeds ranging from 685 rpm to 795 rpm, and the work has shown better breaking strength and less sliver variation. The number of neps per grain was also reduced noticeably.

9,000,000 lbs. of cotton have been processed through the test cards to the present date. Card production may be increased as much as 40% without any increase in neps. If the low production rate is maintained, but at a higher licker-in speed, the neps may be reduced by as much as 10 to 12%.

On an overall basis, an increase of 275 rpm in licker-in speed and altered card settings produced card stock, drawing sliver, and yarn with less variation, an increase of 4.5 pounds in breaking strength, and a decrease of 3.6 neps per grain. Overall variation in yarn on 10s low grade was 109.6% at 517 rpm licker-in speed, and 105.5% at 795 rpm licker-in speed.

The tables show the results before and after the changes were made.

Card Settings, Speeds, and Data

Before and After Changing Licker-in Speed

	Licker-in speed @ 517 rpm OLD SETTING	*Licker-in speed @ 795 rpm* NEW SETTING
lb. per hr.	15.71	25.54
doffer comb speed	1360 rpm	1750 rpm
lap weight per yd.	17 oz.	17 oz.
sliver weight per yd.	60 grains	60 grains
doffer to cylinder	7	7
flats to cylinder	10	10
feed plate to licker-in	17	12
top mote knife to licker-in	15	12
bottom mote knife to licker-in	12	10
front plate to cylinder	34	22
back plate to cylinder top	34	34
back plate to cylinder bottom	29	29
doffer comb to doffer	22	12
flat comb to flats	34	34
licker-in to cylinder	7	7
cylinder screen to cylinder front	74	68
	34	34
	34	34
cylinder screen to cylinder back	29	29
licker-in screen to cylinder	22	17
licker-in screen to licker-in	25	17

Results of Increased Licker-in Speed on Cards

On part waste mix containing strips and SGO 1"; LM 1" and SLM 15/16" cotton. Making 17 oz. per yd. lap; 60 grain sliver; 70 hk roving; single 10s yarn. Licker-in speed changed from 517 rpm to 795 rpm.

	Old	*New*
(1) Carding rate	15.7 lb. per hr.	25.7 lb. per hr.
(2) Card sliver variation	13.7%	13.2%
(3) Drawing sliver variation	20%	17%
(4) Roving variation	42%	29.4%
(5) Breaking strength, 120 yd. skein	169.5 lb.	173.9 lb.
(6) Neps per grain	33	29.7
(7) Overall yarn variation	109.6	105.5%

On LM and SLM 15/16" cotton spun into 18s yarn (Setting identical to those used on lower grade stock)

(1) Card rate	11.7 lb. per hr.	15.7 lb. per hr.
(2) Card sliver variation	13.1%	11.6%
(3) Breaker drawing variation	19.08%	17.95%
(4) Finished drawing variation	22.2%	20.06%
(5) Breaking strength, 18s yarn	103 lb.	105 lb.
(6) Neps per grain	17.7	14.6

(By E. A. Bentley. *Textile Industries*, May 1952, pages 100-3, 231).

NEW COTTON CARD SHOWN AT FAIR IN MILAN, ITALY

A new cotton card has been developed by Fratelli Bettoni, of Bergamo, Italy, and is being displayed at the current International Trade Fair in Milan, Italy, according to word received from Herbert L. Werner of Werner Textile Consultants.

Mr. Werner, who is on a 60-day trip of Europe's textile industry, also delivered an address on acute worldwide problems in the textile industry, before a meeting of the Italian Cotton Manufacturers' Association in Milan.

The new unit has both feeding of the lap and delivery of the sliver in front of the card. This is claimed to be a novel approach to card design, that would facilitate supervision of carding machines. There are 244 flats practically all around the card, which has no grid bars. The flat strips are taken off in the back and delivered into the box through a pneumatic system, also said to be a unique feature. *Daily News Record*, May 5, 1952, page 29).

TO REDUCE NEPS . . . DO THESE THINGS

In General

Keep machines in good condition, free of rust, rough spots, nicks;

Select cotton that have less tendency to form neps;

Use smooth-ginned cotton.

In Opening and Picking:

Work and beat cotton as little as possible;
Avoid pulling or blowing cotton by air through long pipes;
Keep air currents under control;
Get the cotton through the machine as rapidly as possible;
Keep beaters sharp, grid bars shiny;
Use Kirschner beaters as often as possible.

In Carding:

Use recommended speeds and settings. Most important: Run lickerin at around 800 rpm.; Set mote knives at 30°; Set flats to cylinder and doffer to cylinder as close as possible; and strip and grind clothing as often as practical.

Cottons selected were diversified as to fiber characteristics and reported "nepability." The study showed that the fibers with greatest diameter, as Rowden and Deltapine 15, showed the fewest neps during processing.

Mills that are putting the opening rooms on the opposite side of the wall from the picker room are smart. When cotton is carried by air suction or blown through pipes, neps are formed every foot of the way. These pipes are often uneven on the inside, full of nicks, joints, and dents that cause air currents to eddy. When air currents eddy, cotton fibers roll around and become tangled, and neps are formed.

When cotton is permitted to roll around inside opening and/or picking equipment, especially between the beater chamber and screen, the fibers tangle and neps are formed. To prevent neps, control air currents. Move the cotton from point to point without delay.

Harsh treatment of cotton forms neps because the friction of fibers passing each other causes them to tangle. If you run cotton through a picker over and over again, you'll eventually end up with a total mass of neps. To reduce neps, beat cotton as gently as possible and as little as possible. Cut beats per inch to the practical minimum. (from "Neps and How to Control Them" by J. F. Bogdan & Ivan Y. T. Feng; *Textile World*, May 1952, pages 91-106).

ARMY QUARTERMASTER CORPS DEVELOP NEW WATER-REPELLENT THREAD

To prevent the seepage of water through seams of water-repellent Army clothing, the Quartermaster Corps has developed a successful water-repellent treatment for thread used in sewing these garments, the Department of the Army announced.

Tests have shown that untreated thread serves as miniature wicks along which water, falling as rain or snow, seeps through the clothing and thus reduces the protection expected from water-repellent treated fabrics.

It has been demonstrated that ordinary cotton thread may be treated for water-repellency by the same methods in treating the fabrics. Further experimentation has resulted in sewing processes which make it possible for the sewing machine needle to part the yarns of the fabric for passing the thread through instead of cutting the fabric with needle perforations. Leakage through these miniature needle openings does not occur except under extraordinary conditions.

Garments sewn with water-repellent thread and other garments sewn with untreated thread were exposed simultaneously in rain-room tests with rainfall approximating three inches per hour. It was found that seams sewn with untreated thread began leaking in 15 minutes, while the treated thread seams showed no leakage up to seven and a quarter hours.

COTTON SPINNING & WEAVING

A RECORD OF SERVICE AS MEASURED BY . . .

Number of Engagements	2,455
Complete New Plants	147
Major Additions	387
Reports, Appraisals, Studies and Minor Additions	1,921

Locations:
Every state where cotton is processed into textiles; many mills in foreign countries.

Cost of New Plants and Major Additions Over $200,000,000

LOCKWOOD GREENE ENGINEERS, INC.
ARCHITECTS ENGINEERS

Boston 9, Mass. 40 Central Street
New York 20, N. Y. 10 Rockefeller Plaza
Spartanburg, S.C. Montgomery Bldg.

The Army Quartermaster Corps has sent 500 field jackets and trousers sewn with water repellent thread to Korea for testing under actual battle conditions. Purpose of these tests is to determine the increase in initial protection time afforded by the water-repellent thread and the effects on seam leakage of laundering and retreating.

Testing of water-repellent thread to date shows that the strength of the seams is as great as those sewn with untreated thread.

(Department of Defense release of April 30, 1952.)

NEW APPROACH TO METERING CLAIMED FOR NEW DEVICE

Fischer & Porter Co., Hatboro, Pa., has developed the V/A Cell, which, the company claims, introduces to textiles a new approach to orifice metering. Instead of measuring the static-pressure differential across the orifice, as do conventional mercury manometers, the new device meters a continuous by-pass stream around that orifice, it was said.

Thus the metering is kinetic—a constant flow continuously purges the lead lines.

Second, a linear relationship exists between the metered bypass flow and the main flow past the orifice — avoiding the square root relationship between manometer action and orifice flow which has affected orifice metering. The linearity and the consequent 10 to 1 rangeability is inherent in the new method, according to a Fischer & Porter spoksman.

Third, the new method permits simple adjustment of the by-pass rate, to give the unit enormous flexibility (usefulness over widely different flow ranges).

A fourth important attribute claimed for the device as applied to orifice metering is its adaptability to pneumatic connection to points remote from the orifice run.

In the textile industry these characteristics (kinetic action, linearity, rangeability, flexibility and pneumatic transmission) are said to mean:

1. The elimination of condensate pots in steam metering.
2. Greater chart or dial accuracy at low flows due to the linear scale
3. Wide rangeability to satisfy changing metering requirements.
4. The adaptability of orifice metering to solvents and chemicals not amenable to static-pressure manometers.
5. Centralized control and totalizing remote from meter recording rims.

Daily News Record, Page 30 May 5, 1952.)

Stehedco and Southern

The Products That "Weave the World's Needs!"

ANOTHER Stehedco PATENTED FEATURE

Included among the 200 patent grants awarded to the Steel Heddle Mfg. Co., is one for the T-12 Slide Hook, illustrated.

Outstanding in service, the STEHEDCO T-12 is the best and most efficient Slide Hook on the market today. The T-12 reduces binding on the bar, because it has a longer bearing surface for the most FREE SLIDING.

SELF ADJUSTING, it permits minimum separation of heddle and is longer wearing . . . more economical.

Test the T-12 and find out what real slide hook satisfaction is.

I-V-18A

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SOUTHERN SHUTTLES Paris Plant . . . Greenville, S. C.
A Division of STEEL HEDDLE MFG. CO.
STEEL HEDDLE COMPANY OF CANADA, LIMITED
310 St. Hubert Street, Granby, Quebec, Canada

DEVICE TO MEASURE COLOR DEVELOPED BY HATBORO FIRM

An instrument called the Colormaster Differential Colorimeter has been developed by Manufacturers Engineering & Equipment Corp., Hatboro, Pa. The device is claimed to be useful for obtaining accurate color measurements of synthetic fibers, paints, liquids, solution, pigments and other materials.

A complete set of color measurements can be made with the Colormaster in less than 30 seconds, it is said.

The new instrument has a sensitivity appreciably greater than the eye can discern, and is particularly useful for measuring differences between similar colors for process-control applications, according to the firm. It is claimed to be simple to operate, and results are taken directly from a dial.

Three color filters give approximations to the I. C. I. X. Y. and Z. functions, and transmissions and reflections are measured directly, it is said.

The linearity of the instrument is stated to be within approximately 0.2 per cent reflectance or transmission down to 10 per cent; by standardizing on a known dark panel, the range can be extended far below 10 per cent, with linearity within approximately 0.02 per cent.

The dial can be read to 0.1 per cent, and hundredths of a per cent can be estimated. The dead zone can be estimated. The dead zone (backlash) does not exceed 0.02 per cent reflectance or transmission.

Because the Colormaster is said to be highly stable after a warm-up of about one-half hour, it requires infrequent standardization.

Magnetic shielding is included to permit measurement of colors where steel panels may be used. The electrometer input impedance is about 6,000 megohms. Two calibrated, high stable white panels are furnished with the instrument. Standard dark panels are said to be available as accessories.

The instrument is claimed to be vibration-proof and requires very little maintenance; it is not subject to humidity effects. Operation is from 60 cycle to 115 volt power mains, and the power required for the instrument is about 65 watts. (*Daily News Record*, Page 31, May 5, 1952)

NEW BEAM BRAKE DESIGNED FOR COTTON SLASHER CREELS

Deering Milliken Research Trust and the Cocker Machine & Foundry Co. have announced for industry-wide distribution a novel beam brake for cotton slasher creels which has recently been developed by Deering Milliken Research Trust. The new device, of which the production model is pictured here for the first time provides improved yarn tension control and effectively minimizes run-out waste. It has been redesigned and engineered by Cocker Machine & Foundry Company for mass production and is now available.

Extensive tests of these brakes have been run at one of the cotton mills in the Deering, Milliken group, and it has been found that the use of the brakes virtually eliminates the expensive run-out waste which usually results from uncertain tension control. The new device replaces the primitive rope and weight arrangement currently used in most slasher creel operations and does so without going into the elaboration and expense of indepently driving each beam in the creel. The desirable performance characteristics have been obtained by providing for each beam a simple yet mechanically sound and reliable brake and needle bearing assembly. A compact air cylinder holds out of operation a spring which operates the brake, allowing the beams to turn and the yarn to run smoothly from them with a minimum of tension while the slasher is up to speed. A solenoid-operated air valve is employed to exhaust the cylinder when the slasher is stopped or slowed to creep speed, thereby bringing the spring into operation and applying a braking torque. The mechanism incorporates means for "fail-safe" operation in case of failure of power or air.

It is a significant feature of the new development that the brake is adapted to provide two levels of tension. While the beam set and slasher are running at normal speeds, a minimum of tension is maintained on the yarns. When the operator is required to stop or to slow down the slasher, sufficient additional braking is automatically applied to decelerate the revolving beams and to keep them from over running. When the slasher control lever is shifted to allow the slasher to resume normal running speed, the braking torque is automatically reduced and the yarn again runs in the desirable low tension condition. This automatic addition and removal of supplemental braking torque is applied evenly and simultaneously at all beams and permits the yarn tension to be at all times uniform from beam to beam. This is a major factor in making all of the beams in the set run out at practically the same time so that excessive waste on the back beams can be eliminated.

Aside from the intangible savings obtained through better yarn tension control analyses of savings realized in decreased yarn waste alone show that the cost of equipping a creel with the new brakes can be paid for in less than two year's operation.

Patent applications covering the new development are pending in the United States Patent Office. (*Textile Age,* May 1952)

HANNAH DEVELOPS CAP SPINNING UNIT

A new device which, it is claimed, will produce a more uniform yarn in worsted spinning, has been invented by Dorothy M. Hannah, lecturer in textile engineering at Leeds University.

The invention is said to give absolute uniformity of tension in the winding of the bobbin in cap spinning; a more uniform yarn resulting in less breakage in weaving; and a more uniform fabric. The device is a new shape of cap which fits onto the spinning frame without any change in the structure of the frame.

Prof. J. B. Speakman, head of the textile department at the university, stated that an application for a patent has been made and that there is no reason why it should not go into production immediately.

At the university, recently, members of a Lille civic delegation saw the new cap used along side old-type caps. Both types were illuminated by a stroboscope. By this means they could see the difference in action between them.

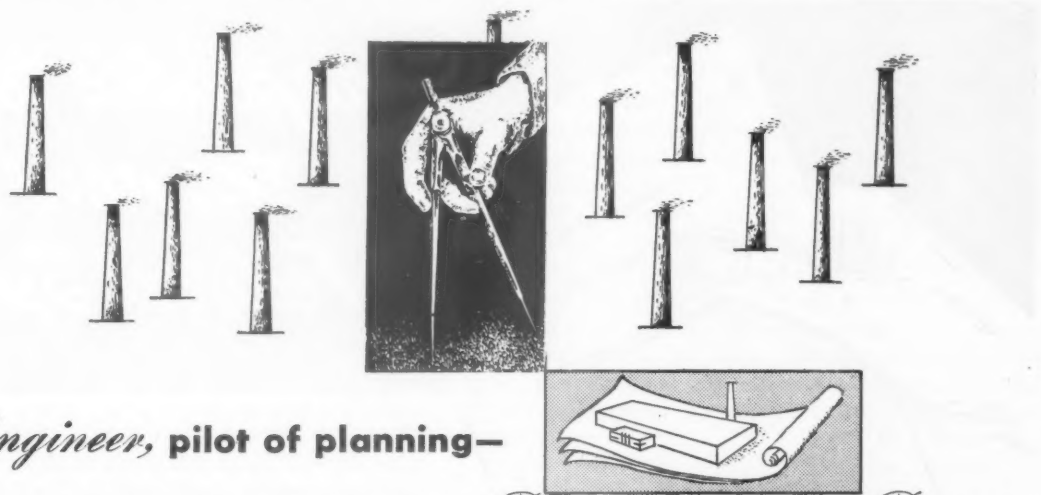
Miss Hannah previously worked with Air Vice-Marshal Geoffrey H. Ambler in the production of another spinning device which enables cross-bred and merino wools to be spun at high drafts. (*Daily News Record,* May 5, 1952)

SPINNING FRAME DRAFTS CHANGED BY LEVERS

Cotton spinning frames with gauge of 3″ or more manufactured by Nazionale "Cogne" S.P.A., Imola, Italy, and recently made available in the United States, are equipped with a draft gear box in oil bath which permits draft changes by simply moving one of four levers (see accompanying photo); also pressure is applied to draft rolls by means of springs, eliminating levers, etc., below the rolls and making cleaning easier—pressure on each can be adjusted independently.

Fitted with the Leblanc-Roth 4-4011 high draft assembly, the frames are built as follows: 2½″ gauge, 1½″ ring, 8.66″ bobbin; 3″ gauge, 1¾″ ring 9.84″ bobbin; 3½″ gauge, 2″ ring, 9.84″ bobbin; 4″ gauge, 2½″ ring.

Other features of the machines are: Pigtail guides have an adjustable motion providing a bal-



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loon of almost constant length and shape; meters on headend of frames provide direct indication of speed of spindles and surface speed of draft rolls; drives are placed on both headstocks—the main headstock includes all drives for the draft and the twist; in the other headstock there is the motor.

Twister frames with the same features are also manufactured by this firm. *Textile Industries,* April 1952, page 211).

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THE CHEMIST LOOKS AT THE NEW SYNTHETIC FIBERS

An exhaustive examination into the status of the newer synthetic fibers was made by the American Chemical Society at its recent national meeting at Buffalo, N. Y.

Following are excerpts from the various speeches given at the symposium:

Selections of fiber monomers, W. W. Heckert, E. I. du Pont de Nemours & Co.

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The vast array of new textiles made possible by the rapid appearance of additional synthetic fibers creates a need for a whole new science to find the best uses for each fiber, Heckert said. This new science would relate the functional performance of garments and textiles to their structure, the conditions of service, and the properties of the fibers from which they are made.

As to the problems of developing new fibers, Heckert pointed out that synthesis itself is no longer the primary difficulty. New fibers appear every day in the laboratory, he said, and several classes of new manmade fibers have appeared in the market to meet some of the obvious demands of the textile industry. Among these were listed nylon, "Orlon" acrylic fiber, and "Dacron" polyester fiber.

"The nylons have provided strong, elastic, and durable fibers with permanent-setting characteristics," said Heckert. "The acrylics have provided bulk and warmth, attractive aesthetic properties, ease-of-care properties including the ability to form pleats and creases which are washable, and in some cases outstanding resistance to degradation by sunlight and various chemicals.

"The polyethylene terephthalate fibers, such as 'Dacron' polyester fiber, have provided exceptional liveliness, resilence and cease-resistance together with ease-of-care features similar to the acrylics.

Influence of molecular structure on fiber properties, H. F. Mark, Polytechnic Institute of Brooklyn.

The following factors were given by Mark as of particular significance for the development of good fiber-forming properties of a polymer:

The **average molecular weight.** It should not be too low, because tensile strength, elongation to break, resistance against abrasion and fatiguing decrease sharply as the degree of polymerization of the material becomes too low.

Molecular weight distribution curve. Present experience indicates that too low molecular weight fractions cause brittleness, whereas too high molecular weight constituents can be responsible for difficult processing in filtration, deaeration, and spinning.

Tendency to crystalize. A certain tendency to form areas of crystaline character upon stretching, slashing, or drawing is of importance, whenever one wants to arrive at an interesting compromise between tensile strength, transversal properties, and break elongation. Strong and regularly distributed intermolecular force centers, stiff segments in the chains, and symmetric arrangements of the substituents favor the tendency for crystallization.

High softening point, low brittle point, and a high resistance against the attack of chemicals, oxygen, light, and micro-organisms are also essential.

Comparative tensile properties of several textile fibers, J. H. Dillon, Textile Research Institute.

Dillon reported to the chemists on work concerning the comparative evaluation of the principal synthetic fibers now on the market or in advanced pilot stages of development in terms of their mechanical properties in tension.

He reported that the synthetic fibers are extremely versatile as regards their simple mechanical properties as measured by the initial stress-strain curves to rupture. He said none of the man-made fibers approaches cotton in mechanical performance, although the reproduction of the properties of wool has been achieved much more closely. Another important point is that some of the hydrophylic manmade fibers have stress-strain curves similar to that of silk in the dry condition but more closely follow the behavior of wool in the wet state.

He indicated that the initial stress strain curve to rupture gives only a small portion of the information necessary to define the mechanical performance of a fiber in tension.

Dillon reported that it is shown with samples of crimped and uncrimped nylon and dacron tow that the imposition of crimp in a synthetic fiber invariably yields a reduction in the Hookean modulus, measured as the normalized slope of the linear portion of the stress-strain curve. The same behavior was found for two samples of wool, he said, which differed only in crimp with a resulting change in modulus.

Relationship or fiber characteristics to fabric performance and properties, Rene Bouvet, Textile Research Department, American Viscose Corp.

He listed the available fibers as follows:

	Man-made	
Natural	*Hydrophilic*	*Hydrophobic*
silk	viscose rayon	dacron
cotton	acetate	orlon
wool	cupra	acrilan
jute	aralac	dynel
flax	vicara	vinyon
animalhair	ardil	nylon
	alginate	fiberglas
		vinylidene chloride
		polyethylene
		X-51

Today the fabric engineer is faced with the evaluation of many fibers of which the properties are ever changing, Bouvet said. It may well be that only a few will meet the long term re-

quirements of success, he said, adding that "to term a fiber revolutionary does not necessarily make it a good textile fiber. It takes fully ten years to develop a promising fiber; it demands another decade to properly apply it."

Bouvet warned that the time is distant when a performance forecast can be safely based on the study of a detailed fiber and fabric blueprint. An immense amount of research work remains to be done before the relationship lines between fiber characteristics and functional performance are well drawn and reliable forecasting becomes a reality.

Discussing blends, Bouvet said that blends of fibers are infinite in their combinations if left to one's imaginaton, but he warned they must comply with principles predicated on reasonable cooperation of fiber length, harmony of extensibility, similarity in drafting properties and degree of spinnability. Dyeing affinities also are to be compatible with available dyeing procedure. Sure enough, he said, some of those laws can be violated, but the practicability of the outcome in most cases is highly doubtful.

Industrial applications of the newer synthetic fibers, Henry S. Grew, Jr., Wellington Sears Co.

Pointing out that cotton fabrics are well established in the industrial field, Grew said that the textile industry has benefitted tremendously from chemical research which has had such far-reaching effects in other industries. He said that because the government loan supports on cotton have kept the price above its natural level, man-made fibers have largely replaced cotton cords used by the tire industry — the most important single use for industrial textiles. The production of about 300 million pounds of high-tenacity filament rayon largely going into tire production has displaced about 700 thousand bales of cotton. He praised the price stability of the man-made fibers.

The yarn properties are the most important to consider in the selection of a fabric for an industrial purpose, he noted, and added that in the case of continuous filament yarns the denier, number of filaments and twist are the variable factors involved for a given fiber, whereas in the case of staple fiber yarns, staple length, fiber denier, or fiber crimp and twist must be considered.

Uses of the new synthetics, their advantages and disadvantages in blankets, draperies and sheets, G. K. Lake, Pepperell Mfg. Co.

The fiber characteristics needed for a blanket are largely of a mechanical and geometric nature, Lake told the group. The desired quality is essentially that of bulk. The shape of the cross section of the fiber plays an important part in establishing the bulk characteristics, he explained. It is evident that the irregular cross section of such fibers as orlon or dynel and possibly acrilan will make the fibers bulk more than the circular cross section of nylon, dacron or even rayon. However, Lake explained there is a contradictory characteristic required also. Not only must the blanket have bulk and have a resilient nap but it must retain its characteristics after laundering and use. He revealed that Pepperell's dynel blanket is far beyond the stage of experiment and many, many thousands of units are now in the hands of the public.

He described this blanket as shrink, mildew, moth and fire proof, stain-resistant and can be laundered with strong chemicals in the case of bad stains. However he said it developed static charges and hoped that someone in the chemical industry would come up with a durable, washable, anti-static agent within the year and solve this problem for his company.

Touching on sheets and pillowcases, Lake felt their development in the field of synthetics would remain in the future for sometime. He said that a good cotton muslin sheet would stand up to as many as 200 launderings in actual service, a rugged test for any textile product. Raising the cost of a sheet from $36.00 or so a dozen to around $75.00 per dozen for a synthetic product, would change them from a routine purchase to a matter of capital investment and this, in Lake's opinion, the house-wife is not prepared to do.

Uses of the newer fibers in woven apparel fabrics (men's and women's suitings) Arthur M. Spiro, Robbins Mills, Inc.

For general use in suitings there is no basic fabric being made from one hundred per cent of any fiber which could not be improved from the standpoint of price, touch, appearance or performance, through the addition or substitution in part of some percentage of another fiber, Spiro told the group. "Since there is no universal fiber for suiting purposes, then blends of two or more fibers in a given fabric will provide the basic general concept of our engineered fabric development", he said. Wherever scientific engineering research has been applied, blends provide optimum results.

In the last analysis, he said, appearance is more a function of styling and manufaturing techniques such as spinning, weaving, dyeing and finishing, than it is of fiber content. A good technician with flexible equipment can style fabrics utilizing fibers which have certain limitations as to appearance characteristics. The relative case of doing so, however, and the cost involved

is definitely related to fiber content and may in the long run spell the answer to whether or not the fabric will live after the initial promotional effort has faded", he said.

Effect of the newer synthetics on the wool market, Warner von Bergen, Forstmann Woolen Co.

Wool's percentage share of the consumption of all fibers in this country has held its position closely around a 9 per cent level, von Bergen said. He listed the main properties of the wool fiber which are responsible for the position wool holds as follows: high absorptive properties, high resilience of wool in its dry and wet state; the resistance to wicking of water; its ability to felt; its good dyeability and its resistance to free flaming. The synthetic fiber-wool blends have been able to show advantages in tropical-weight fabrics, he said, but in winter-weight fabric where thickness and warmth are essential, the replacement of wool with nonfelting fibers would not be possible.

Effect of the newer synthetics on markets for cotton, L. K. Fitzgerald, Dan River Mills.

"With the exception of nylon, it could be fairly said that thus far the newer synthetics have been used in modest quantities", according to Fitzgerald. "They are being merchandized today with apparent success", he said, "but on so limited a scale, in comparison with cotton, and for so short a time, that any positive conclusions as to their large scale purchase by the consumer in the volume markets would be premature."

Continuing, he said "We have done considerable work with the new synthetics in apparel fabrics. We know that they will yield excellent results blended with cotton, in the way of fabric beauty and serviceability, but we do not yet know how economically sound such use may be."

Touching on cost, Fitzgerald said that in providing these new fibers for the textile industry, chemists have not stood on costs, and quite properly so, because research cannot thrive in a bookkeeper's atmosphere. "But to those of us who are in the middle," he said, "between the prices of these newer synthetics on the one hand, and the extremely price conscious buying market on the other, cost is an ever-present and major item."

"Assuming that price differentials between the newer synthetics and cotton will remain as they are for some time, it seems most unlikely that the newer synthetics will have appreciable effect on the markets for cotton, except as they may be used in a limited way in blends or in combinations with cotton," he said.

Taking the cost factor a step further, Fitzgerald told the chemists that his mill has made a dress goods chambray with a vat dyed cotton warp, filled with one of the new synthetic filament yarns. This fabric has to sell at around a dollar a yard. If it had been made of all-cotton, even chemically modified cotton, it would sell at about a half dollar a yard. Another fabric described was a summer suiting weight seersucker, the warp being made of a combination of vat dyed cotton and one of the new filament synthetics, with a new synthetic filament for filling. This fabric, as constructed, has to sell in the range of a dollar a yard. If made in all-cotton, it would sell at around eighty cents a yard.

From these figures, Fitzgerald said it was apparent that the cost differentials are so much in favor of the all-cotton fabrics, or cotton and rayon fabrics, that only by sizeable consumer buying tests can it be determined whether or not blends of cotton with these newer synthetics will be saleable in quantity. "If consumers can pay the prices for these blended fabrics," he said, "then we believe the affect on cotton will be beneficial, since cotton will be lifted into higher markets." (*Textile Age*, page 16-28, May 1952).